ILLINOIS

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

PRODUCTION NOTE

University of Illinois at
Urbana-Champaign Library
Large-scale Digitization Project, 2007.

Research in Librarianship

MARY JO LYNCH
Issue Editor

Library Trends

Spring 1984

Library Trends

(ISSN 0024-2594)

LIBRARY TRENDS, a quarterly journal of librarianship, provides a medium for evaluative recapitulation of current thought and practice, searching for those ideas and procedures which hold the greatest potentialities for the future.

Each issue is concerned with one aspect of librarianship. Each is planned with the assistance of an invited advisory editor. All articles are by invitation. Suggestions for future issues are welcomed and should be sent to the Editor.

Published four times a year, in summer, fall, winter, and spring. Office of publication: University of Illinois Graduate School of Library and Information Science, 249 Armory Bldg., 505 E. Armory St., Champaign, IL 61820. Second class postage paid at Champaign, Illinois.

Subscription price is $20.00 a year (plus $1.00 postage for overseas subscribers). Individual issues are priced at $6.00. All foreign subscriptions and orders should be accompanied by payment. Address orders to Journals Department, University of Illinois Press, 54 E. Gregory Drive, Box 5081, Station A, Champaign, IL 61820. Editorial correspondence should be sent to Publications Office—*Library Trends*, 249 Armory Bldg., 505 E. Armory St., Champaign, IL 61820.

Indexed in *Current Contents, Current Index to Journals in Education, Library and Information Science Abstracts, Library Literature, PAIS*, and *Social Sciences Citation Index*.

Postmaster: Send change of address to University of Illinois Press, 54 E. Gregory Dr., Champaign, Ill. 61820.

PRINTED IN THE U.S.A.

Library Trends

VOLUME 32 NUMBER 4

SPRING 1984

University of Illinois
Graduate School of Library and Information Science

This Page Intentionally Left Blank

Research in Librarianship

MARY JO LYNCH
Issue Editor

CONTENTS

This Page Intentionally Left Blank

Introduction

MARY JO LYNCH

ALTHOUGH RESEARCH IN THE VARIOUS areas of the field has been surveyed often in *Library Trends,* it has been twenty years since this journal has published a general issue on research in librarianship. The first such issue, in October 1957, was edited by the Committee on Research of the Association of American Library Schools.[1] Most of the articles described research related to a particular aspect of work in libraries (organization and administration, reference, readers' services, cataloging and classification), but there were also articles on mass communication and adult reading, on education for librarianship, and on research methodology.

This last topic was expanded in the July 1964 issue on "Research Methods in Librarianship" edited by Guy Garrison.[2] Articles on survey, historical, bibliographical, and experimental research were included, as well as articles on documentary resources useful in research,inadequacies in research proposals, collection and use of descriptive statistics, and publishing the results of research. The issue closed with Jesse Shera's classic analysis of "Darwin, Bacon, and Research in Librarianship."

Much has happened to research in librarianship since July 1964. This issue of *Library Trends* aims to bring the record up-to-date and also to indicate what might happen in the future. It should be noted that we have called the area to be covered librarianship—not the traditional "Library Science" or the more modern "Library and Information Science." This has been done partly because of the titles of *Library*

Mary Jo Lynch is Director, Office for Research, American Library Association, Chicago, Illinois.

Trends issues related to this topic and partly because of the titles of two textbooks in the field—Goldhor's 1972 *An Introduction to Scientific Research in Librarianship*[3] and the more recent *Research Methods in Librarianship* by Busha and Harter.[4] We hope this choice of words will not mislead potential readers into assuming that the editors and authors are unaware of the dynamic nature of the field. We believe that librarianship in 1984 is quite different from what it was twenty years ago, but it is still librarianship. The focus of this issue is on research related to the work done by librarians when they provide library service. This focus is a very broad one; it does not exclude theoretical work except that which has no forseeable relationship to the practical concerns of librarians.

There is no separate article on information science in this issue because a separate article would imply that information science, like economics or psychology or political science, is a discipline outside library science which, like them, has made a contribution to it. In my opinion that is not true. Information science works with many of the same intellectual problems that have been of concern to librarians for centuries. True, information scientists (once documentalists) often use more analytical methods of studying these problems but there are many reasons for that and this is not the place to go into them. Librarians are often members of the American Society for Information Science (ASIS) and "library schools" are often schools of library and information science. For all of these reasons, it seems clear that information science is not really separate from librarianship in the way that the other disciplines are.

A second reason for omitting information science as such from this issue is that research which is more in the tradition of information science than library science is well surveyed each year in the *Annual Review of Information Science and Technology*.[5] It would seem that the territory shared by library and information science would be better served by devoting space in this issue to other fields.

The central core of this issue is a series of articles inspired by an idea in Shera's 1964 essay. Shera spoke of the promise of team research—a recent development in the general world of research, "born of man's continually growing awareness of the complex interrelationships within the world of knowledge." Shera believed that, "because librarianship...is concerned with all human knowledge," the team research approach to library problems was especially promising and he listed both "a number of areas in which library research could profitably seek

assistance from other branches of intellectual activity" and the branches which he believed could contribute to each area.[6]

The twenty years since Shera's essay have not seen a large increase in team research on library problems, but they have witnessed the frequent and productive use of theories and techniques from other fields in research related to library service. This issue of *Library Trends* features a series of articles by researchers whose primary identification is librarianship but who bring to it either considerable training in another field or a strong and serious interest in it. Each was asked to answer three questions with regard to the assigned discipline:

1. How have the theories and techniques of this field been used to help researchers formulate and answer questions related to librarianship?
2. What are the major contributions to research in librarianship during the past twenty years which have used theories or techniques from this field?
3. How do you believe that this field will (should?) be used in the future to aid research in librarianship?

Each author addressed those questions in a different way and suggested answers which should prove stimulating to the entire library and information science community—practitioners, researchers and students.

Shera's focus was on the social sciences and this issue follows that lead. Although libraries are filled with the results of scholarly research in the humanities, the results of such work rarely impinge directly upon the operation of libraries. Scientific research in the physical and biological sciences is more likely to do so but usually through technologies such as those related to preservation and computers. Social science research, however, often has or could have a direct effect on how librarians understand or do their work. This issue cannot claim to have covered all social science disciplines which have something to contribute to librarianship but we believe it covers a number of the major areas.

The issue begins with essays on two well-established disciplines: history and economics. Lee Shiflett elucidates the possibles and necessary interactions between historical research in librarianship and other research approaches to the field. He goes on to describe the value of historical research in a field where so much depends on "the cumulative nature of decision-making and the effects of these decisions over time," and he makes several suggestions for improving future historical research in librarianship. Nancy Van House describes research on the

economics of libraries, a topic which she conceptualizes as a subset of research on the economics of information viewed as a product or commodity. Van House reminds us that the economics of libraries is concerned with choices made within and about libraries and summarizes research on choices in four important areas: the supply of library services, the demand for library services, support for library services, and the library labor market.

Next are three papers on newer social science disciplines. Jane Robbins-Carter presents various frameworks for organizing political science research and chooses, for her article, the historical framework which identified early studies as institutionally-based and recent studies as process-based. Robbins-Carter discusses both types of political research related to librarianship and ends with a plea for an increase in "empirical research focused on library related variables in relation to political process variables."

Sara Fine examines the use of psychological concepts in library research and argues for a change of direction. Fine claims that we have "virtually no understanding of how people interact with information and with libraries" and then describes how such an understanding might be developed. Leigh Estabrook discusses the problem of applying sociological theory and methodology to librarianship and uses the technique of citation analysis to examine what the literature reveals about connections between the two fields.

Helen Howard and Ann Prentice prepared articles on two fields which, like librarianship, are interdisciplinary: political science and organization theory. Howard relates the history of organizational theory, describes themes from this field which are used in library research, and concludes that organizational theory has the potential to be an important resource for research in librarianship. Prentice takes a similar approach to political science and concludes that future research in the two fields will deal with similar topics. Both public administration and librarianship must cope with the delivery of service in a time of limited resources, and both are faced with changes in the use of and access to information.

Edward O'Neill completes this group of articles by describing research in a field which is really not a discipline but a group of techniques for analyzing problems in several disciplines. O'Neill provides a succinct history and definition of operations research and explicates the concept of a model which is central to work in this field. He then describes significant developments in the application of operations research to library and information science.

In addition to articles focusing on specific disciplines, this issue also contains several dealing with general matters. An introductory essay by the issue editor discusses the many definitions of research and describes the uneasy connection between research and librarianship. Thomas Childers assesses the role of schools of library and information science in doing research and in providing education about it. Shirley Fitzgibbons discusses funding for research and related activities in the last twenty years. Finally, Rose Mary Magrill summarizes twenty years of publishing both of research results and of information about research.

Taken as a whole, these essays provide abundant evidence that research in librarianship is very alive—although certainly not without problems. The editors and authors associated with this issue are hopeful that it will help the library community to solve those problems and produce research which will build the knowledge base our field needs now more than ever.

References

1. "Research in Librarianship." (issue theme). (Edited by the Committee on Research. Association of American Library Schools). *Library Trends* 6(Oct. 1957).

2. "Research Methods in Librarianship" (issue theme). (Edited by Guy Garrison.) *Library Trends* 13(July 1964).

3. Goldhor, Herbert. *An Introduction to Scientific Research in Librarianship.* Urbana-Champaign: University of Illinois Graduate School of Library Science, 1972.

4. Busha, Charles H., and Harter, Stephen P. *Research Methods in Librarianship: Techniques and Interpretation.* New York: Academic Press, 1980.

5. The *Annual Review of Information Science and Technology (ARIST)* has been published annually since 1966. Over that time, its professional association sponsor has undergone one name change; and its editors and publishers have changed several times. Carlos A. Cuadra was the first editor and continued in that position from 1966 through 1976. Since 1977, Martha E. Williams has been the editor.

6. Shera, Jesse H. "Darwin, Bacon, and Research in Librarianship." *Library Trends* 13(July 1964):148.

This Page Intentionally Left Blank

Research and Librarianship: An Uneasy Connection

MARY JO LYNCH

IN THE FIRST TEXTBOOK written to provide *An Introduction to Scientific Research in Librarianship,* Herbert Goldhor identified one of the major difficulties involved in talking about research: the many denotations and connotations of the term. Goldhor wrote:

> Research is a word which has such desirable overtones that people use it in ways which are quite dissimilar.... Everyone wants to share in the reflected glory of the term and no one can stop people from using the word in any way they wish.[1]

Although Goldhor's book is devoted to a very specific meaning of the word, he begins with a broad definition: "research is any conscious premeditated inquiry—any investigation which seeks to increase one's knowledge of a given situation."[2] Given that definition, it is clear that people doing many different things are justified in calling their activity research.

At least four general categories can be used to describe those many different activities: practical research, bibliographical research, scholarly research, and scientific research. Those four categories have been created by this author and are not universally recognized. Many will disagree, at least to some extent, with the description of the categories which follows. However, this categorization is an attempt to separate the very different meanings of a term (*research*) frequently used without any modifier. This common practice leads to confusion, especially

Mary Jo Lynch is Director, Office for Research, American Library Association, Chicago, Illinois.

among librarians, who deal almost daily with research of all types. The following paragraphs explain how the categories differ and how each is related to librarianship.

Meanings of "Research"

Practical research includes activities of shoppers, stock brokers, investigative journalists, house hunters, entrepreneurs—anyone with a problem to be solved who sets out to gather information needed in the solution. The information they seek is sometimes in published documents that are easily available, but sometimes it is in official or private records that are hard to get or interpret. It may also be in the minds of people who may or may not be willing to reveal what they know. The work involved in doing this kind of research lies in ferreting out information wherever it is and applying it to the problem at hand. Libraries are sometimes a resource for the person doing this kind of research, but there are many other resources.

The second large category, bibliographical research, is much more closely related to libraries. This type of research is concerned with first identifying previous work related to the problem at hand and then submitting it to some form of analysis in order to arrive at a clearer understanding. Thus the investigator arrives at conclusions by reordering the thoughts of others. This is what high school seniors and college freshmen do when they write the required term (or research) paper. It also includes work done by more advanced investigators to find out what is already known about a topic—often in order to establish a base upon which to build a study which investigates the unknown.

Research in the bibliographical sense is the topic of numerous books and articles describing "how-to-do-it." Often this kind of work is called "library research," a practice which causes confusion between research done *in* libraries (bibliographical) and research *about* libraries which falls into our third category, scientific research.

Scientific Research

There are numerous scholarly books and articles on scientific research and almost as many definitions. Scientists and philosophers or historians of science, are fascinated with the problem of defining what scientists do to establish new knowledge. Jesse Shera's classic essay on "Darwin, Bacon, and Research in Librarianship" written for an earlier issue of *Library Trends,* describes it this way:

> Shorn of its mysticism and its methodology, research since (at least) the time of Bacon has been an answering of questions by the accumulation and assimilation of facts which lead to the formulation of generalizations or universals that extend, correct, or verify knowledge.... Described in terms of its sequential acts, research is an intellectual process whereby a problem is perceived, divided into its constituent elements, and analyzed in the light of certain basic assumptions; valid and relevant data are collected; hypotheses (if any) are through objective testing rejected, amended, or proved.[3]

Implicit in this quotation but worthy of explicit statement is the understanding that scientific research discovers new knowledge. Practical research and bibliographical research, on the other hand, aim at finding and analyzing existing knowledge. Scientific research is the topic of this issue of *Library Trends,* but first we must consider a fourth type—scholarly research.

Scholarly Research

This research has characteristics of both bibliographical and scientific as those two were just defined. Scholarly research, typically done by humanists, is similar to bibliographical in that it is often based on previously published work related to the matter at hand. The analysis goes far beyond reordering the thoughts of others, however, and involves disciplined inquiry which enables the scholar to make an original contribution to the knowledge base of a field. Although data are not collected from nature, as is the norm in scientific research, data are collected and organized in an objective way and analyzed according to systematic principles, thus relating this work to that which is recognized as scientific.

Connections to Librarianship

People doing practical research often come to the library for help or call to ask questions. Most of the volumes in a typical reference collection are intended to aid such investigation and staff who perform it are sometimes called "research librarians."

Bibliographical research is done primarily in libraries and most often in libraries of colleges and universities. To assist students in performing it well, the service called Bibliographic Instruction (BI) has been developed within academic libraries during the last ten or fifteen years. Bibliographic instruction means conveying an understanding of how information is communicated through published sources found in

libraries. It is usually provided in connection with courses in specific disciplines and focuses on helping students to comprehend the uses of and relationships between certain kinds of information sources.

Since the winter of 1983, BI practitioners have had their own journal, entitled *Research Strategies.* The choice of that title is, perhaps, unfortunate. Although the editors specify in their first editorial that the focus will be on "the process of information seeking within the library context,"[4] many in the academic world think of "research strategies" in connection with research methodology in the scientific or scholarly sense—our third and fourth categories. An editorial in the second issue of *Research Strategies* indicates that others have questioned this use of the term although the editors insist it is not valid to object. The matter cannot be explored further here, but it is a good example of the confusion in the library world regarding the meaning of *research.*

The problem of multiple meanings intensifies when one moves to the third general category, scientific research. There are at least three links between this activity and librarianship. First of all, people doing research in the scientific sense of the term use the library to do the practical and bibliographical research which is often preliminary to it. Secondly, the library is a storehouse of the results of scientific research. Finally, the library is an object of study for scientific researchers.

Ray Carpenter's excellent volume on *Statistical Methodology for Librarians* explains that one reason why librarians should understand the scientific research process, of which statistical methodology is an important part, is that they work with the results of scientific research:

> As mediators between recorded information and users, librarians must be able not only to locate information but also to interpret or evaluate this information for patrons. Much information is in the form of or is based on research monographs, articles, or reports which the librarian must first identify and select and then be able to disseminate. By understanding both the language and the general principles, as well as the methods that make up this literature, the librarian can fill his or her role intelligently.[5]

This is true for almost all libraries but especially true in research libraries, so called because they have collections of such breadth and depth that they can support the practical and bibliographical research which is a first step in much scientific research.

Carpenter goes on to speak of two additional reasons why librarians need to understand the research process, reasons connected with scientific research about libraries:

> First, the librarian is a consumer of various data and studies them in order to better his or her professional performance or the services of the organization....Second, although the number may now be modest, librarians will increasingly be expected to be participants in research projects.[6]

Carpenter is quite sanguine about the role of scientific research in librarianship, but his perspective is not shared by all who write about library research in our day and is at variance with many who have expressed opinions in the past about scientific research and librarianship.

The results of scholarly research are also found in libraries, and scholarly researchers typically use the library more intensively than scientific researchers. Because more librarians are trained in the humanities than in the sciences, it is easier for librarians to understand how scholarly research is done. Because scholarly researchers are more likely to need books and periodicals as sources for their work, they are more likely to be supportive of library needs. These factors probably influence librarians to be more sympathetic to scholarly research than to scientific and may be important reasons, though unrecognized, why the incorporation of scientific research into library education and practice has been such a difficult process.

Historical Perspectives

Until the founding of the Graduate Library School (GLS) at the University of Chicago, scientific research methodology was not applied to librarianship. Sidney Jackson, who surveyed "Research" in the ALA centennial volume on *A Century of Service: Librarianship in the United States and Canada* noted that the early years of that century were largely devoid of scientific activity.[7] This was, perhaps, to be expected since the German model of academic training, which stressed scientific method, was just beginning to be adopted in the United States.

The introduction of scientific research into the field of librarianship was initiated in 1923 by *Training for Librarianship,* Charles C. Williamson's Carnegie-backed analysis of library education programs. That study led to the founding of the Graduate Library School at the University of Chicago with one million dollars of Carnegie endowment:

> Within three years the research style customary in the academic and professional world was unveiled to those in librarianship unfamiliar

> with it and to those who may have been familiar with it but did not associate it with librarianship.[8]

The road was not smooth for the incorporation of scientific research into education for librarianship. A large part of the problem, and one that persists in some degree until the present day, is the lack of understanding in the library field as to what is meant by "graduate work." The first dean of the GLS, George Works, explained this issue well in a 1929 speech to the Chicago Library Club:

> The Board of Education for librarianship has applied the term "graduate school" to any library school requiring college graduation on the part of those seeking admission. From a certain viewpoint, this is undoubtedly a legitimate use of the term. It is, however, a connotation different from that which the word commonly has in university circles. Graduate work means research, and research means extension of the boundaries of knowledge....Manifestly, this is a very different objective from those that actuated the existing graduate schools as defined by the Board of Education for librarianship. Those schools are primarily concerned with passing on to their students a body of principles and practices that have been found useful in the conduct of libraries. The authorities of the University of Chicago were not interested in the establishment of a school of that type. They were interested in a library school only if it were to be a graduate school in the sense that its primary objective was the extension of the boundaries of knowledge relating to libraries and librarianship.[9]

George Works left the GLS in a few years, partly because it was very difficult to build a graduate school of the character just described in the face of continued opposition from the field.[10] Other deans tried, some with more success, some with less, but ultimately the vision of the Carnegie Corporation remains unfulfilled—that there would be at least one library school where the focus was on discovery of new knowledge through scientific research. Richardson makes this point subtly[11] and Houser and Schrader make it more harshly.[12] Although some would argue that Houser and Schrader are much too severe in condemning librarianship as a profession entirely lacking a scientific base and laying the major blame on failures at the GLS, few could claim that, in 1984, librarianship does have a solid conceptual foundation established through scientific research and a tradition of respect for and interest in it.[13]

Why not? Several reasons have been offered in the years since the idea of applying scientific research to librarianship first appeared. C.C. Williamson's Founder's Day address at the Western Reserve University School of Library Science in 1930 praises the results of research in other

fields, complains that librarians neither conduct nor support research as they should, and offers two cogent reasons:

> To my mind the real reason that there is so little scientific study of the problems of library service is that practically no librarians have been trained in scientific methods....Moreover, there has been, and still is, I believe, a deep-rooted prejudice among library workers against subjecting their activities to scientific scrutiny.[14]

More than fifty years have passed, but those reasons still have some validity. Thomas Childers explores library education and research in another article of this issue, and considers training in scientific methods. As for prejudice against scientific scrutiny, it is a hard statement to prove, but the record of research activity and support for it in librarianship, in the face of different conditions in other disciplines and professions, would seem to support the claim.

Relatives of Research

One reason for the uneasy connection between scientific research and librarianship is the prominence of several activities that can be considered close relatives of scientific research. Each of these activities has made contributions to what librarians know about their work. Jackson noted that much early work of a research-like character was "largely confined to current fact-gathering."[15] That activity has continued through the years with several agencies engaged in counting how many or how often or how much of something occurs in libraries.[16] Although fact-gathering outside the framework of scientific research is of limited value in extending the boundaries of knowledge in a field, it is often of immediate practical value and can sometimes be used in scientific studies if it is done with the care which scientific method requires.

Another type of investigation related to scientific research is the "service study," a type of work done by students and faculty at the GLS in the early days. Richardson mentions the service study several times in his history of the GLS and implies that the term meant assistance provided by GLS faculty and students to practitioners who were trying to solve problems in their institutions.[17]

The modern counterpart to the service study is the consultant report. Although financial aspects are quite different, the contrast with research is similar. Joe Hewitt has analyzed the differences:

> In consulting studies someone with the appropriate expertise is commissioned to gather information relevant to a specific problem and to present an expert opinion on the solution to that problem based on

> the consultant's general knowledge and the specific information gathered for the study. Consulting is the very useful process of applying independent judgement to a problem, but it is not research, which applies rigorous methods of observation and analysis in a manner that allows the data to speak for itself.[18]

Hewitt goes on to explain why the two types of study must not be confused by funding agencies:

> A research approach to a problem takes a great deal more time than a consulting approach. Much longer segments of time must be dedicated to the design phases and to gathering data. The researcher must have greater latitude than the consultant in defining relevant factors. In large-scale studies the research problem itself may dictate a sequence and a pace that draws out the study over an extended period of time and research is rarely a useful approach to problems perceived to be urgent. Tight scheduling and pressure by the funding agency do not create an atmosphere that is conducive to sound research, although all of these conditions may well be appropriate to consulting studies.[19]

A third close relative of scientific research is demonstration and development. Research is linked with demonstration and development in the major federal legislation currently providing funds for either activity in librarianship, Title II-B of the Higher Education Act of 1965. Michael Buckland believes that the close identification of research with demonstration/development is one of the factors undermining research efforts in librarianship: "There is a heavy emphasis...on demonstration and development (seeking how to get things done better) rather than on basic research (seeking to understand things better)."[20] Shirley Fitzgibbons comments on this problem in her article on funding for research.

Three kinds of studies have just been described which are not scientific research but are closely related to it, thereby implying that it is a simple matter to separate one from the other. That is not really true and researchers often differ as to what a particular piece of work should be called. Haynes McMullen has suggested that there are several factors which affect that decision and has devised an ingenious solution to the problem:

> Let us think of one of the types of clotheslines often found in American backyards, consisting of a group of parallel wires or cords stretched between a pair of horizontal bars, each bar at the top of a post. We shall let one post represent non-research and the second post, research; each line will stand for a characteristic of research. Then, instead of deciding whether a particular investigation is or is not research, we will decide to what extent it meets the criteria for research

> by fastening a clothespin at the appropriate place on each line. For example, if one line represents the relationship of data to conclusions, and if the conclusions at the end of a study are appropriately related to the data, then we should clamp a pin to that line at a position near the "research" end; if the conclusions rest, instead, largely on widely held but unproved assumptions the pin should hang near the other end. It seems to me that only the general configuration of pins will indicate to what extent a study constitutes research. We must name the lines but we must not expect to place a pin on every line when considering each piece of work. And we must not expect all pins to dangle at the research end.[21]

The Uses of Research

McMullen's clothesline image may cause the reader to wonder why it matters whether or not a study qualifies as scientific research. Goldhor would reply:

> There are undoubtedly many ways by which a problem can be explored and knowledge accumulated, including intuition or the flash of insight, and serendipity or the discovery of truth by accident. However, the method of scientific research is...the one most likely to be effective and successful on the average and in the long run.[22]

Although most scholars in the library field would agree that research in the social sciences (of which library science is one) can never lead to the kind of firm knowledge about reality which the natural sciences have achieved, most would also agree that scientific research is essential to librarianship.

The major reason cited by those who consider the matter, is that scientific research can provide the knowledge base which is the hallmark of a profession. Librarianship lacked that base when the GLS was founded and lacks it still. Since the last *Library Trends* issue on research, Goldhor has said so,[23] and Lancour,[24] and Ennis.[25] Carpenter said it very succintly in 1978: "Librarianship, at this point in time, lacks a highly developed systematic conceptual framework for explaining its various purposes and functions."[26] No one has tried to refute these critics.

What would this systematic conceptual framework look like? Amusi Odi, in a recent critique of research in library and information science charged that "the sole purpose of research is the development of theory," which he then defined as "an internally connected and logically consistent proposition about relationship(s) between phenomena."[27] Ben-Ami Lipetz criticized this view, citing his own study of

what *scientists* believe to be the important objectives of research.[28] Lipetz examined writings of scientists about research and found they talked about six products: description, definition, hypothesis, explanation, prediction, and experimental technique.[29] Odi's response claims that he and Lipetz are talking about the same thing—that the functions of research are the functions of theory.[30] The argument is mentioned here, not to settle it, but to suggest that although the phrase "knowledge base" may sound too theoretical for a practical field such as librarianship, it might actually be composed of elements which are much closer to reality: description, definition, hypothesis, explanation, prediction, and experimental technique.

The desired conceptual framework or knowledge base would help to justify the claims of librarianship for the status of a profession. What is more important, it could give practitioners a sense of what they are about "in cognitive rather than normative terms."[31] Finally, it would serve as a starting point for studies which would assist librarians in understanding their changing role in a changing world.

Such a knowledge base would have a powerful influence on the daily work of a librarian though it would probably be an indirect influence. Joe Hewitt, who spoke on "The Use of Research" in the 1982 conference-within-a-conference sponsored by the ALA's Resources and Technical Services Division, explained why scientific research is often not of immediate assistance to the librarian in decision-making:

> Decision-making in libraries takes place within a complex environment of institutional traditions, practices, and policies. It takes into account the particular qualifications, attitudes, and opinions present among the staff who must carry through with decisions, and it is critically affected by organizational and resource constraints. In short, libraries are a severely restrictive environment for applying generalized research results in their pure form.[32]

Hewitt goes on to suggest that this situation is regrettable for three cogent reasons and concludes that, "it would clearly be in the best interests of the users of libraries and of librarians if the findings of research could become a larger and more visible element in the decisions we make in managing libraries."[33] Finally, Hewitt describes five improvements which must be made before research can be of more practical value to practitioners. The last of these five is particularly appropriate for mention here: "The need to acquire a stronger empirical base for understanding the interaction of research and practice in librarianship."[34] Hewitt found little previous commentary, let alone research, on this topic.

A beginning might be made by exploring the extent to which attitudes and methods of scientific research have been used by practitioners in gathering and organizing data to solve practical problems, to conduct what has been called "in-house research." Hewitt specifically excluded this, what he calls "quasi-research," from consideration in his speech though he suggested that it "probably plays a greater role in our day-to-day work than published research"[35] which is, presumably, generalizable.

Faculty Status

There is one aspect of practice where scientific research clearly is a major factor although in a very different way from the uses Hewitt was discussing. In some academic institutions librarians are expected to do research in order to gain or maintain faculty status. To succeed in this environment librarians need to understand scientific research and to appreciate the fact that many academics do not really accept any other meaning of the word. George Works was quoted earlier explaining that research means "extension of the boundaries of knowledge."[36] Book reviews, literature surveys and annotated bibliographies, even if scholarly and published, may substitute for research on some campuses. But in many places they are not accepted.

There is no published evidence that academic librarians have failed to gain tenure or promotion because they did not conduct scientific research. However, there is some evidence that published studies conducted by academic librarians are increasingly following the scientific model. Soon Kim and Mary Kim analyzed articles published in *College & Research Libraries* from 1957 to 1976 for a paper at the Boston Conference sponsored by ALA's Association of College and Research Libraries (ACRL). In comparing the first decade to the second decade they found such changes as:

> Only 15 percent of the articles of the first decade were quantitative in nature, while 43 percent of the second decade articles were classified as quantitative studies....Twenty-seven of the later studies specified the sampling strategy...while only 18 percent of the earlier studies described their sampling strategies.[37]

Statistical techniques such as analysis of variance, multiple regression and factor analysis did not appear at all in the first decade whereas they did appear, albeit rarely, in the second.

A study of all the papers presented at the Boston Conference is less optimistic about the research capabilities of academic librarians.

Coughlin and Snelson, using a technique developed by Atherton et al. to assess research in library and information science,[38] analyzed the Boston Conference papers to answer this question:

> Did the papers presented at the first ACRL conference follow the norms established for the scientific or scholarly papers in other disciplines? The use of the two adjectives, scientific and scholarly, is intentional. Scientific here means papers based on the scientific method and scholarly here will mean papers based on the research traditions of humanists.[39]

The investigators found that of the 66 papers, only 33 percent were research and they concluded that, "instead of adopting the standards of scientific papers used by other disciplines, ACRL has used less stringent criteria for its conference papers.[40] They suggest ACRL take steps to increase the amount of research at future conferences, noting that, "if we do not...we handicap the ongoing task of putting teeth into our various status statements."[41]

Professional Organizations and Research

Although evidence has been cited that library practitioners have not always been enthusiastic about research, the current structure and programs of professional organizations in the field shows some evidence that research is considered important in 1984. The American Library Association (ALA), the Special Library Association, the Medical Library Association and the American Society for Information Science all have committees concerned with research. Within the American Library Association, the largest of these organizations, many of the eleven divisions mention responsibility for research in their constitution and bylaws and many also have research committees serving either the division as a whole or one of its sections.[42] Several ALA divisions have columns about research in the division's journal or newsletter. ALA has appointed a Committee on Research and also has a membership unit exclusively concerned with research, the Library Research Round Table (LRRT), and a unit which has research as a major interest, the Library History Round Table.

Annual conferences of the library organizations frequently feature research. At ALA's annual conferences, for example, LRRT traditionally sponsors a series of "research forums" where research results can be presented formally. LRRT's information exchange suite provides a place for less formal discussion of research as do poster sessions sponsored by the general conference planning committee.[43] The American

Association of School Librarians has sponsored its own research forum since 1974 and an annual research forum is often sponsored jointly by the Association for Library Services to Children and the Young Adult Services Division. All of these forums plus programs sponsored by other divisions for presentation of the results of research relevant to the division's interests are included in a list of "Meetings Related to Research" prepared and distributed annually by the ALA's Office for Research and the Library Research Round Table.

Despite the membership interest in research just described, ALA's ambivalent attitude toward the role of research in the association is evident in the history of the association's Office for Research (OFR). Established in 1972 following a recommendation of the "Policy Statement of the Role of Research in the American Library Association" adopted by the ALA Executive Board in 1970,[44] OFR had a diffuse charge which included such phrases as "serves as a focal point for the many research interests...within ALA" and "translates unmet needs into active programs."[45] Closing OFR has been recommended by the Committee on Program Evaluation and Support (COPES) or the Executive Director at least three times since it was established. Budgetary constraints were the motivating factors. Because the Committee on Research sensed confusion among ALA leaders about OFR's mission and nature, the Committee on Research drafted a new and much more practical charge to the office which was approved in January 1984 by the ALA Executive Board. The new charge reads as follows:

1. To collect, analyze and interpret data about the membership of ALA and users of ALA products and services on an ongoing basis for organizational decision making.
2. To collect and/or promote the collection of statistics about libraries and librarians so that ALA and other organizations will have pertinent and consistent data available to them.
3. To monitor research related to libraries and disseminate information about such studies to the profession.

   In carrying out these functions the Office for Research will provide advice regarding research and statistics to the Executive Board, Council, and other units of ALA requesting such advice.[46]

It remains to be seen whether or not the new charge will enable OFR to develop a program which ALA is willing to support, thereby institutionalizing research as a significant part of librarianship's major organization.

Agencies Conducting Research on Libraries and Information Services

In another part of this issue, Thomas Childers describes the role of schools of library and information science in conducting research. But this work is also done in many other places. Guy Garrison provided a systematic analysis of research on public libraries conducted in the 1970s for a presentation to LRRT which was later published in *Public Libraries.* Garrison was interested in the "demographics" of the research which led him to explore such questions as "who did the work" and "where it was done."[47] Unfortunately, this has not been done for other areas of research in library service. Clues are available, however, in two annual sources—the *ALA Yearbook* and the *Bowker Annual of Library and Book Trade Information.* Since 1976, an article on "Research" has been included in the *ALA Yearbook.* Written by a different expert each year, the article regularly includes tables showing grants for research made by the Department of Education, the National Library of Medicine, and the National Science Foundation. Usually tables are arranged by name of the institution conducting the award and include the name of the principle investigator, the topic and the amount awarded.

Since 1980, Mary Jo Lynch has written an article for the *Bowker Annual* on "Research on Libraries and Librarianship" covering work done in the previous year. Examination of these two sources reveals that research in the field is conducted by at least four different agencies in addition to schools of library and information science: (1) other university departments or schools, (2) libraries of various types, (3) nonprofit organizations, and (4) commercial research firms.

The commercial firm which does much of the work in this field, King Research, Inc., was covered by a feature article in the September 1980 issue of *American Libraries.*[48] Except for that article, there is little commentary in library literature about the various agencies conducting research in the field. There are probably two reasons for this: the volume of activity is not great enough to generate comment, and librarians in general are not very interested in where or how research is done.

The Future

What does the future hold for research in librarianship? Some would say "nothing" because libraries will disappear, as newer ways to communicate information supplant the recorded forms in use today. It seems more likely, however, that librarianship will continue its trans-

formation into whatever name is given to the field for professionals who mediate between information in any form and the people who need to use it.

Because the environment out of which those needs will arise is becoming more and more complex and the forms of conveying information are becoming more diverse, it seems evident that librarianship, by whatever name it is called, will need the understanding of information and its uses which only scientific research can provide. Fortunately, there is a growing body of people concerned with libraries and information services who are educated to understand research and trained to conduct it. Fortunately, also, there is a growing appreciation among practitioners of the value of research. In the short term, none of what we have today is enough and leaders of the research community complain that improvements must be made. In the long term, however, the field is far advanced from where we were fifty years ago when the Graduate Library School was struggling to be born at the University of Chicago.

The November 1980 issue of the *Journal of the American Society for Information Science* featured Laurence Heilprin's article on "The Library Community at a Technological and Philosophical Crossroads: Necessary and Sufficient Conditions for Survival." Heilprin explained the two conditions for survival as follows: "In order to attain control over its own destiny the library community must keep its own members up to date educationally; and beyond this,...[must] perform the research that alone creates and keeps leadership in its field.[49]

Heilprin believes that unless appropriate and sufficient research is conducted, the library community will not be able to transform itself but will be absorbed by other groups that will take over the information function for society. The challenge is clear: the connection between research and librarianship must be changed from one that is uneasy to one that is firm. To do so, leaders in the field need to pay careful attention to several factors: to the numerous meanings of the word research and the different ways each kind of research affects librarianship; to educational programs that develop an ability to understand and conduct scientific research; to publications and programming that discuss work in progress and disseminate final results; to increasing the availability of funding; and, finally, to the incorporation of a research perspective into the way librarians think about what they do.

References

1. Goldhor, Herbert. *An Introduction to Scientific Research in Librarianship.* Urbana-Champaign: University of Illinois Graduate School of Library Science, 1972, pp. 1, 7.

2. Ibid., p. 7.

3. Shera, Jesse H. "Darwin, Bacon, and Research in Librarianship." *Library Trends* 13(July 1964):142, 144.

4. *Research Strategies* 1(Winter 1983):2.

5. Carpenter, Ray L., and Vasu, Ellen Storey. *Statistical Methods for Librarians.* Chicago: ALA, 1978, pp. ix-x.

6. Ibid., p. x.

7. Jackson, Sidney L. "Research." In *A Century of Service: Librarianship in the United States and Canada,* edited by Sidney L. Jackson, et al., pp. 341-54. Chicago: ALA, 1976.

8. Ibid., p. 345.

9. Works, George. "The Graduate Library School at the University of Chicago." *Libraries* 34(July 1929):311.

10. Richardson, John V., Jr. *The Spirit of Inquiry: The Graduate Library School at Chicago, 1921-51.* Chicago: ALA, 1982, pp. 69-70.

11. Richardson, *The Spirit of Inquiry.*

12. Houser, L., and Schrader, Alvin M. *The Search for a Scientific Profession: Library Science Education in the U.S. and Canada.* Metuchen, N.J.: Scarecrow Press, 1978.

13. For a presentation of one conceptual foundation see, Buckland, Michael K. *Library Service in Theory and Context.* New York: Pergamon Press, 1983. (Buckland cites research as he constructs his theory, though he does not talk about the need for more research.)

14. Williamson, C.C. "The Place of Research in Library Service." *Library Quarterly* 1(Jan. 1931):10.

15. Jackson, "Research," p. 342.

16. Lynch, Mary Jo. *Sources of Library Statistics, 1972-82.* Chicago: ALA, 1983.

17. Richardson, *Spirit of Inquiry,* pp. 48-49, 65, 92, 153-54.

18. Hewitt, Joe A. "Research on Bibliographic Control." *The Bookmark* (University of North Carolina Library), nos. 51/ 52, p. 109.

19. Ibid.

20. Buckland, Michael. "Theme V: The School, Its Faculty and Students." In *Changing Technology and Education for Librarianship* (Proceedings of the Conference "Frontiers II: Changing Technology: Its Impact on Scholarly Communications, Research Libraries and Education for Librarianship and Information Science," held at Whistler, British Columbia, Canada, 1-4 June 1983), edited by Basil Stuart-Stubbs. Greenwich, Conn.: JAI Press (forthcoming, fall 1984).

21. McMullen, Haynes. "The Place of Research in Library Schools." In *Library Education: An International Survey,* edited by Larry Earl Bone, pp. 345-46. Urbana-Champaign: University of Illinois Graduate School of Library Science, 1968.

22. Goldhor, *An Introduction to Scientific Research,* p. 1.

23. Ibid., p. 2.

24. Lancour, Harold. "The Library School and Research in Librarianship in North America" (paper delivered at a meeting sponsored by the Committee on Library Education at the Council of the International Federation of Library Associations' 37th Session, Liverpool, England, 2 Sept. 1971) (unpublished).

25. Ennis, Philip H. "Commitment to Research." *Wilson Library Bulletin* 41(May 1967):899-900.

26. Carpenter, and Vasu, *Statistical Methods,* p. xii.

27. Odi, Amusi. "Creative Research and Theory Building in Library and Information Sciences." *College & Research Libraries* 43(July 1982):313.

28. Lipetz, Ben-Ami. "Letter to the Editor." *College & Research Libraries* 44(Jan. 1983):73-74.

29. _____ . *The Measurement of Efficiency of Scientific Research.* Carlile, Mass.: Intermedia, Inc., 1965.

30. Odi, Amusi. "Letter to the Editor." *College & Research Libraries* 44(Jan. 1983):74-77.

31. Shera, Jesse H. *The Foundations of Education for Librarianship.* New York: Becker & Hayes, 1972, p. 420.

32. Hewitt, Joe A. "The Use of Research." *Library Resources & Technical Services* 27(April/June 1983):130.

33. Ibid., p. 131.

34. Ibid.

35. Ibid., p. 124.

36. Works, "The Graduate Library School."

37. Kim, Soon D., and Kim, Mary T. "Academic Library Research: A Twenty Year Perspective." In *New Horizons for Academic Libraries* (Papers presented at the First National Conference of the Association of College and Research Libraries, Boston, Mass., Nov. 1978), edited by Robert D. Stuart and Richard D. Johnson, pp. 377-78. New York: K.G. Saur, 1979.

38. Atherton, Pauline. "Research in Information Science: An Assessment." In *Perspectives in Information Science (Proceedings of the NATO Advanced Study Institute on Perspectives in Information Science, Aberystwyth, Wales, U.K., 13-14 Aug. 1973),* edited by Anthony Debons and William J. Cameron, pp. 665-83. Leyden, The Netherlands: Noordhoff International Publishing, 1975.

39. Coughlin, Caroline, and Snelson, Pamela. "Searching for Research in ACRL Conference Papers."*Journal of Academic Librarianship* 9(March 1983):21-26.

40. Ibid., p. 23.

41. Ibid., p. 25.

42. ALA Office for Research. *Current Research Interests and Related Activities: A Directory of ALA Units.* Chicago: ALA, 1979.

43. Mary Jo Lynch, personal communication to the Steering Committee of the Library Research Round Table, 15 Aug. 1983 (she reported abstracts of poster sessions and estimated that 25 percent of the poster sessions at the Los Angeles Conference in 1983 reported on research).

44. See also, ALA Office for Research, *Current Research Interests,* p. 3; or *American Libraries* 3(June 1972):629-31.

45. *ALA Handbook of Organization and Membership Directory, 1983/84,* s.v. ALA Offices: Statements of Purpose ("Office for Research). Chicago: ALA, 1983, p. 170. (The same description is repeated in earlier *ALA Handbooks,* beginning with the 1971/72 issue.)

46. "1983-84 ALA Executive Board Document #37" (unpublished).

47. Garrison, Guy. "A Look at Research on Public Library Problems in the 1970s." *Public Libraries* 19(Spring 1980):4.

48. Cherry, Susan S. "Who is King Research and Why are They Saying All Those Things About Us?" *American Libraries* 11(Sept. 1980):476-80, 493.

49. Heilprin, Laurence. "The Library Community at a Technological and Philosophical Crossroads: Necessary and Sufficient Conditions for Survival." *JASIS* 31(Nov. 1980):392.

This Page Intentionally Left Blank

Clio's Claim: The Role of Historical Research in Library and Information Science

ORVIN LEE SHIFLETT

Introduction

JESSE SHERA'S DEMAND FOR "the cooperation of scholars and scientists from a variety of disciplines in a team attack upon problems of great complexity,"[1] voiced in the last issue of *Library Trends* devoted to research, holds more than passing import for the historian concerned with libraries. Examples of highly productive cooperative efforts do exist in many disciplines, but history is traditionally a solitary pursuit and historians have infrequently collaborated successfully on anything of value or worth. As often as not, historians disagree about the significance of their findings and, sometimes they disagree that the findings have significance at all. However, historical study as an approach to library and information science research cannot exist independently of other research approaches. And, when combined with them, it has the potential to share in the cooperative effort at ultimate understanding addressed by Shera. Historical research is much more synthetic and eclectic in its approach than other research methods, using concepts and conclusions from many other disciplines to explore the historical record and to test the conclusions arrived at by other methodologies.

Many methods used alone or in conjunction with other supporting techniques of data collection and analysis can adequately demonstrate that some particular situation or relationship between variables exist in

Orvin Lee Shiflett is Associate Professor, School of Library and Information Science, Louisiana State University, Baton Rouge, Louisiana.

the present. But the persistence and permanence of these conclusions will always be questionable without historical verification. The results of other research can and should act as a guide to the historian, pointing to potentially fruitful areas of research that can further test the conclusions of other social science approaches. While the use of "analogies and comparisons evoked by some other discipline" in historical scholarship is always questionable unless the analysis stands the test of rigorous historical standards,[2] these borrowings do offer a point where history can participate and perhaps even lead in the search for a cooperative solution to the research needs of library and information science.

History can never aspire to be a primary methodology in library and information science research. The mere existence of a separate Library History Round Table (LHRT) and a Library Research Round Table (LRRT) with essentially distinct memberships within the structure of the American Library Association (ALA) indicates the degree of estrangement between those who concern themselves with research using the techniques of the more rigorous social sciences and those interested in the history of libraries and librarianship. The community of library historians looks at much library and information science research as if "some rough beast, its hour come around at last, slouches towards Bethlehem to be born," while other researchers have tended to discount the value of historical study as mere antiquarianism. Both groups have ignored the fact that the value of research is not determined by the approach, but by results and conclusions.

It has been often asserted that libraries do not exist in a vacuum. They are not isolated from other institutions of information and culture in which they have their organizational existence. A school library without a school to serve is never found. An academic library without a college or university cannot exist. Even the New York Public Library does not represent an institution totally independent of the fortunes of New York City. The very existence of libraries and information centers depends not so much on their relation to their users and information sources as to the parent organization—scholastic, municipal, or private—that they serve. The problems of research into the nature of library and information science are therefore much more complex than it has often been viewed: it is not the simple relationship of information to user, but that relation as filtered through an organizational structure that has an historical relation to the library that serves it.

Library history has been criticized—often correctly—for its lack of rigor. This charge is no different from that leveled against history written by the professional historian. Compared with the forms and

language adapted from the natural sciences to the social sciences and from there to library and information science, history is at best an impressionistic form of research more closely akin to literary research than physics. But empirical research has come to be widely recognized as useful to the historian. As a "somewhat uncritical and even complacent discipline," history should benefit from the results of other disciplines applied to library and information science to at least force library "historians to criticize their assumptions, to expose their premises, to tighten their logic, to pursue and respect their facts, [and] to restrain their rhetoric."[3]

It is in this way that historical research may respond to Shera's challenge and contribute to the evolving paradigm of library research. Each of the hypotheses advanced by other forms of research is testable as an historical phenomenon. Historical phenomena are also testable by any number of survey and other methodologies commonly used in library and information science research. The role of historical study must be interactive with other forms of research. The very looseness of historical methods allows the historian to explore a vast number of problems that are approachable only in one or two aspects by other methodologies. It is in this capacity that is found both the strength and weakness of historical study in library and information science.

Current Status of Library History

History is a major research methodology in library and information science as measured by the amount written, but its popularity has dramatically decreased in recent years. This is evident in the types of research projects that are being accepted by doctoral committees. Historical research constituted 33.2 percent of the methodological approaches to doctoral research from 1925 until 1972. From 1973 to 1981, historical methods accounted for only 15.6 percent of the efforts.[4] There are undoubtedly many possible reasons for this, but the major one seems to be the pervasive belief of some doctoral committees and dissertation advisors that historical research represents wasted effort. Research using methods adopted from the more rigorous social sciences has become the modality of research in library and information science.

The new emphasis reflects a growing demand for utility in library research and a feeling that to be of value, research must sustain external indicators of validity. That is, it must fit into the paradigm of what is *known* about the question under investigation. In these two elements—utility and validity—many feel that history has failed and they demand

more productive, in the sense of "more practical," forms of investigation. The call is for research that will increase librarians' ability to effectively and efficiently approach the decision-making process in order to enhance their ability to provide information services. But, the demand neglects the necessity for research that can enable librarians to understand why libraries and information services are important to society. The demand for applicability of research results to library problems, accompanied by the perceived ineffectuality of history to produce these kinds of results, has led to a devaluation of history's potential and real role in the research effort.

Library history has too often been viewed in the narrowest sense—as simply the history of libraries. It is usually associated with only the administration and organization of libraries, reference services, technological innovations, and professional questions among other aspects of professional activity. But it is more than that. Libraries contain books, periodicals and whatever else a librarian determines might be a correct and proper information source and service to a reader. Research in library and information science includes both the media collected and organized and those who use these media. Thus, the history of books and printing and that of other media, the history of the library as an institution, and the history of the use made of materials and libraries are all topics within the legitimate domain of library history.[5] If the label, "library research," is applied to research into the operation of politics on library development, the publishing patterns in subject literatures, the reading and information gathering habits of selected populations, or any other topic that impinges however tangentially on the profession, then historical aspects of these phenomena must be allowed as "library history."

The condemnation of library history as "mere antiquariansism" is only valid if the short view of history is held. History is essentially a research method—not a subject. It is only limited in what it can investigate to that which any form of library and information science research would consider as legitimate problems. Each of the subjects under investigation by survey research, case study, experimental design, or any other method have historical aspects that need to be thoroughly understood in order for the problem to be completely researched.

The Nature of Library History

The study of libraries differs in several fundamental ways from other institutional studies in the nature and substance of the decision-

making process. The real measure of the success or failure of a library derives from its ability to deliver to the user a specific bit of information or a specific item. The typical demand on the services of an information source is either a specific request for a single fact or book, or for "something about," or for "information on." These are diffuse demands placed on a diversity of resources. Other institutions provide a far more limited array of services in response to far more restricted sets of demands. As a consequence, their individual decisions are more crucial to the enterprise than those of libraries. The decision of Ford to build another Edsel could end the enterprise entirely. The decision of a library to add a second copy of a $20 book or to drop a subscription to *Time* will not make that sort of impact. It may, twenty years from the decision, make one reader somewhat dissappointed that the library's subscription did not extend back that far, but interlibrary loan can supply the item if it is crucial enough.

While business histories, governmental histories and other institutional histories must focus on the major turning points of the organization's life, library history consists of a series of relatively inconsequential individual decisions that cumulate to form the reputation of the contemporary institution. "We are what we can deliver" is a truism in the library world. What a library and information center can deliver, though, is only what is actually in the collection or what it has access to through a variety of cooperative forms of networking and interlibrary loan mechanisms, all of which have evolved over time. The measure of success, then, is a measure of user satisfaction with a decision that may have been made years earlier by a long forgotten reference, acquisition, collection development, or any other librarian in whatever capacity.

One may object that there are major decisions in libraries and, of course, there are. The decisions made are major in that they sometimes involve large amounts of money and frequently commit the library to a specific course for a long period of time. But the effect of the Dewey or LC classifications on user satisfaction or the relative merits of various automated systems used in circulation control have never been effectively evaluated in terms of user satisfaction. The informed guess that adequate access to materials would be more important to users than the relative merits of exit control systems is strong enough to indicate that what many librarians consider "major" decisions are relatively insignificant housekeeping functions to most library users. People who enter libraries can use any or all of these systems. System failure occurs when users are not allowed access to what they want or at least to what they

think they need. This failure of libraries to respond to user demands is most often determined not by any major management decision, but by the simple decision to acquire a title or to give it a specific subject heading. Because of the cumulative nature of decision-making and the effect of these decisions over time, the nature of the library and other information systems is primarily understandable as an historical phenomenon.

As such, history at least as much and perhaps more than other research methods, provides librarians with a context. It is only through understanding history that we can begin to make sense of the environment in which we work. The questions of why, for example, a particular library has a strong collection in a particularly unlikely area, such as the Confederate imprints of the Boston Athenaeum, or why a library pursues a particularly aberrant classification scheme, such as the New York Public Library, are historical questions that are unanswerable by any other method. Too frequently, library collections and services are incomprehensible in terms of present users and only make sense when we find that the service or collection was begun by an early librarian in response to some real or imagined need—or simply as a "hobby horse" the librarian happened to ride.

Rhetoric and History

A central difficulty with determining the usefulness of historical research is one of understanding the way in which it convinces the reader of its essential truth. In history, little beyond the purely factual can be proven or disproven absolutely—and that only as far as the records are complete and accessible. Historians can only describe and arrive at general conclusions about their data. History rarely offers the opportunity to apply elaborate or even the simplest statistical tests to data to convince readers of the validity of the findings. Historians convince—or fail to convince—their audience not by elaborate numerology, but by the facts at their command and their ability to argue pursuasively, ever conscious that they may have missed something and that the nature of historical records only allow, at best, a partial picture of the reality of past events.

The formal discipline of history has made fruitful use of statistical techniques. Even so, there is much controversy surrounding the reinterpretation of data collected for other purposes and a genuine concern over the possibility that some statistical data may well be a distortion of the actual historic facts.[6] Much of what are significant features of our

daily existence will leave little or no record for the future historian. Examples of this abound in research into the past. The familiar example of unpaved country roads of the nineteenth century having three rather than the two tracks of those of the twentieth century is only one manifestation of this. Future historians of library and information science may well have to deal with the decay of printed material, of recorded sound, and other forms, so that by 2050, it may be legitimate to assume that those publishers who are conscious of the permanence their products may represent the total record available to the historian. The tremendous numbers of currently popular materials that are prone to self destruction because of their physical composition—such as regency romances, parapsychology, science fiction, and self-help books—will be unrecorded as part of our library collections. The practice used in many public libraries of circulating mass-market paperbacks on a "trust system" rather than integrating them into the general collection will leave no records, and thus the future historian will have little with which to determine the actual pattern of circulation.

Other records that do exist will indicate use. The circulation of popular romances cannot be documented in the records of libraries, but other popularity measures can be determined by the published statistics of the industry trade journals, the records of publishers and perhaps in the accounting records of distributors that supply the reading racks of bus stations and convenience stores.

The careful and judicious use of these sorts of records can enable historians to explore and frequently explode "some long-cherished generalizations about the past [that] had suddenly achieved the poetic status of a free-floating fantasy."[7] Though library history would seem a study receptive to statistical analysis, there have been few attempts to use "cliometrics" to investigate library problems.

Individual historical works are frequently dogmatic in their asserting of a final word. But this is, in good history, merely a rhetorical device used to convince the reader, and perhaps also the writer, of the value and importance of the work, particularly when the record may be incomplete or conflicting. Though the ultimate validity of history must, of course, rest on the facts unearthed by the historian, the writer's task to make sense of the data allows a great measure of individual discretion in interpretation and conjecture. Historical research and writing is meaningless without the rhetorical devices used by the historian to provide continuity to what, without these devices, would be miscellaneous and disjointed fragments of fact.

Historical rhetoric, like historical research itself, functions because it is provocative rather than precise and evocative rather than definite. Historical research cannot approach the total control of variables—or even identify the variables—that other research methods attempt. It can only function through the information available and that cannot be controlled by the historian. The imprecision of available data must be augmented by the imagination and talent of the historian so that the whole that the historian presents to the reader makes sense. The historian must frequently abandon or go beyond the fact and speculate on its meaning through rhetoric. Historians "deliberately choose a word or a phrase that is imprecise and may turn out to be ambiguous, because of its rich aura of connotation." The sacrifice of precision for the images that rhetoric can produce is a unique contribution of the historical method to research in library and information science for "it is the best means a historian has for formulating and communicating what he knows."[8]

Comprehensive understanding of the totality of human experience is clearly impossible, so historians are forced to select aspects of behavior to order their search for truth and, consequently, remove themselves further from that truth. But, by doing so, they make their data and conclusions manageable and meaningful in terms of their limited scope and purpose. Why librarians became librarians or left libraries or why they accepted their working conditions are, for the most part, unknown. At best, researchers can survey contemporary librarians to ascertain their attitudes toward their work and their relation to their feeling of a "profession." But, these can only offer a partial view of the reality that constitutes librarianship. To get at the reality, the researcher must understand what actually moved women or men to accept the calling and what motivated them to commit themselves to it. The nature of the evidence is such that historians have to work from slight data to what can only be, at best, a tentative whole; and they must convince not from statistical inference, but from argument.

Big History/Little History: The Question of Historical Significance

The history of individual libraries as the modal form of library history has come under challenge in recent years, but it is no more a challenge than formal academic historians have presented to the emergence of local history as a specific area of study. The argument that the history of a local institution or geographic region is so limited in scope

as to be irrelevant to the larger uses and needs of history begs the question of what precisely is a *larger use* of history.

The formal academic discipline of history has largely resolved its own discomfort with limited topics through the establishment of a special form of "local history" that has its own internal justification of reputability; library history as yet has been unable to do so. Too much library history is written without reference to the larger American society, without an awareness of current historiographic assumptions, and seemingly as an exercise in the amassing of details to the disparagement of meaning. Indeed, in much library history we are handed the minute details of buildings, benefactors, and books, "but were it not for the names of people and places it might as well be in Timbuktu for all the attention that is given to the general background."[9] This lack of a context for the history of libraries and of librarianship has led our research into a morass where a few high promontories of meaningful work have jutted above the general despondent slough.

It has been widely maintained that the manner in which much library history has been created has amounted to a trivialization of the role of the library. Like the early local historians whose efforts confounded the professional historians, library historians have been "content to heap up all the facts they could discover, without order, art, or method, and with no criterion for distinguishing the trivial from the significant."[10] The motive for library history frequently has not been for the solid purpose of true historical understanding, but more often for "ornament which is nice to have on the edifice, but really not very useful."[11] Thus the nature of most library history has been an accumulation of facts and dates having little or no obvious relation to the larger issues facing librarianship.

Despite these criticisms of "Little History," it must be admitted that history progresses incrementally and it is the nature of library decision-making that the increments available for study are small ones. Maurice Tauber and Louis Round Wilson, in their classic text on academic library administration, addressed the incremental nature of library history when they observed that "only through a series of histories of individual libraries will it be possible to write a comprehensive chronicle of American university libraries and of their role in higher education."[12] This observation can, of course, be extended to any type of library. The idea is that the accumulation of a large number of individual library histories upon which a synthesis can be based is necessary to the completion of any broadly-based study. A major problem with

contemporary library history seems to be that there is little recognition that the information contained in individual library histories adds to the body of knowledge from which a larger perspective can be synthesized. There have been a few attempts to work from the shoulders of others to attack a broader history of libraries, but the available results have not been particularly successful. The work of Jesse Shera, Sidney Ditzion, and Arthur Hamlin, among others, stands as a monument to an attempt to create a new "frontier thesis" for library history. But beyond these, the work of those who write Little History has not been used to expand our larger historical consciousness.

Yale historian Jack H. Hexter addressed the problem of historical significance and utility in his *History Primer.* Early historians schooled in the Germanic traditions of Von Ranke envisioned a total, universal history based on historians integrating the individual pieces into a coherent unity that would constitute an ultimate form of historical truth. The modern historian has set a more modest and, perhaps, a more attainable goal that recognizes the limitations of humanity and the historian:

> The notion that at this late date history is likely to rescue mankind from the impending ultimate consumation of its propensity for self destruction is not one likely to commend itself to a moderately skeptical mind. It is indeed grasping at a straw; but then in the past by grasping at enough straws and somehow patching them together, groups of men have managed to keep themselves afloat, and it is just barely possible that we (all mankind this time) can do it again. If keeping mankind afloat seems at all worthwhile doing, any straw that helps in the least to prevent the enterprise from sinking is worth adding to the too scant mass.[13]

The raft of library and information science may not be that leaky, but frequently small pieces of "approximate truth" are better than no truth at all and attempts by other methodologies to sort out truth suffer from the same difficulty because of their inability to control an environment in which variables are measured, recorded and evaluated.

Much of the notion that the larger issues are more amenable to "research" status than smaller questions can be attributed to the urge for "scientific" research. One of the more influential workers in the shaping of library research methodology has been Herbert Goldhor at the University of Illinois. Goldhor's *An Introduction to Scientific Research in Librarianship* has become a standard. However, his emphasis on

hypothesis testing over other less rigorous types of investigation has led to a demand for control in research design that militates against the vague formulation of hypotheses that is too common in history. Moreover, his insistence that "history is not written for its own sake, but to serve as a guide or help for men in handling problems today and tomorrow"[14] runs directly counter to the basic principle of the academic historian that historical research does indeed serve as its own justification.

To limit historical research to that which is "generalizable" is to limit it to the realm of Big History and many valid and needed topics are ignored, disuaded, or, perhaps worse, undertaken as a sort of "antiquarianism" to commemorate the first century celebration of some library. Some outstanding individual library histories have arrived at the realm of Big History. Phyllis Dain's history of the New York Oublic Library[15] is an excellent example. But her work succeeds in the larger context because of the importance of the institution. Had this been the history of the LaCrosse, Wisconsin or the Malabar, Florida public library, it would not have received the respect it so deserves no matter how well it had been executed.

The use of the hypothesis in library history does not preclude Little History—the group of individual library histories that make up the majority of the literature in the field. The kind of local library history called for by Tauber and Wilson provides the data collection without which larger perspectives could not be developed, but further, it offers test cases for the hypotheses that are developed by the larger perspectives. In none of the social sciences is an hypothesis concretely and forever proven. It is in the nature of the work that any conclusion must be tentative and serve as a guide for future research. History, and, especially, library history is no exception.

Even broad-perspective history must recognize that historians cannot be absolutely certain that all the data has been found and that they have made sense of it. The nature of history requires a constant investigation of previous conclusions both in the large terms of movements and meanings and the testing of the hypothesis in smaller instances. It is, of course, unfortunate that most local library history fails to come to terms with the findings of the larger library world even though local library history can offer the researcher some tentative guideposts and does much to make obscure information accessible.

Recent research has left us with a plethora of hypotheses that need further verification. As reaction to Michael Harris's revisionist interpretation of the public library movement[16] and criticism of the work of

Jesse Shera and Sidney Ditzion indicates, the current health of library history has improved since the period when the interpretation of public library development was posited on a progressive view of American History. A basic reevaluation of the assumptions that underlay the work of most serious library historians in the 1970s has begun a process that may well retailor library history.

We now have several theoretical frameworks which we can begin to test on individual libraries. The work of Dee Garrison, for example, provides a view of the feminization of American public librarianship and its consequent effect on the developing profession which must be at least acknowledged by all future researchers.[17] While plausibly argued, it is a vision that must be tested against the reality of the past of the public library. The best of library history provides us with the content by which we may avoid the narrow antiquarianism that characterizes Little (library) History. It offers a point of focus that could give the history of one library meaning in a larger context and thus rectify the too pervasive failure of library history to go beyond the immediate facts of the local historical record.

Sources for Library History

The data upon which historical analysis rests generally fall into two classes of documentary records—primary and secondary. Primary sources compose the evidence closest to the event under investigation. These documents usually are manuscript diaries or letters but they can be printed reports of the events as recounted by observers or participants. Secondary sources are usually printed reports of the event that use primary and other secondary sources as bases for data collection and are reported by a person other than a direct observer or participant in the events.

Historians recognize sharp distinction between primary and secondary sources, but in actuality, the distinction is not as precise as might be supposed. Samuel Swett Green's *The Public Library Movement in the United States 1853-1893* and, more recently, Arthur T. Hamlin's *The University Library in the United States*[18] both are examples of books written by men who supplement their own direct experience and participation in the events and phenomena described with written sources, both primary and secondary. As such they must be evaluated in parts based on the documentation upon which each section builds. Further, in some forms of historical analysis, the secondary source becomes the focus and thus gains the authority of primary evidence. A good current

example of this is Stephen Karetzky's analysis of the work of the early faculty of the University of Chicago's Graduate Library School, in *Reading Research and Librarianship: A History and Analysis,*[19] in which the research produced by the Graduate Library School's faculty became the primary resource of study.

While the emphasis of most historical research is on the discovery and use of primary sources, in many cases the existence of a body of published proceedings, such as those of the American Library Association, represents a primary resource for the collective values of a profession that cannot be overlooked by the library historian. *Library Journal* and the *ALA Bulletin/American Libraries* represent, in a real sense, sources of "official" positions of American librarianship on a diversity of issues, some of which are only tangential to what is generally recognized as its professional domain. As such, these official positions assume an importance far greater than that of the individual librarians of the ALA committees that generate them. They do, in a real sense, determine the set of "social usages, beliefs, and current ideas [that] are imposed on individuals automatically" which Julian Marías has called "vigencia," the network of "binding custom" that defines membership in a particular society.[20]

The normative activities of the professional schools and library associations, and the communication we have with other librarians, to a great extent determine or at least strongly influence librarians' professional reactions to their functions in society. It is obvious that every librarian did not and does not subscribe to the mores and culture of librarianship. This can be seen in individuals' letters-to-the-editor when issue is taken with positions stated in prior articles. But the commitments to intellectual freedom, to faculty status for academic librarians, to the importance of school libraries in the education effort, and to any number of other attempts to define the librarian's job and professional status are rarely seriously challenged in the library press.

Early education for librarianship recognized the issue through its distinction between and occupation and a profession and in its insistence on a particular "kind" of person acceptable as a "professional" librarian. Melvil Dewey attempted an early definition of the type of person fit for this calling in his assertion that education for librarianship could never train the "complete" librarian. He made an explicit distinction between what schools could do—train librarians in the housekeeping activities—and what they could not. They could not prepare librarians at what Dewey visualized as the "moral" plane of existence, "where the librarian puts his heart and life into his work with

as distinct a consecration as a minister or missionary and enters the profession because it is his duty or privilege." It was at this higher level that Dewey and other early educators who were his followers placed the true profession of librarianship.[21] By subscribing to this sentiment, library educators did little but teach the library hand, accessioning, and other mechanical tasks, relying on the schools' admissions policies to ensure that only the truly committed person was allowed to participate in the profession.

In this way, the personal characteristics of the individual librarian became a primary determinant of the professional focus of librarianship. But, if this were a fundamental truth, it would seem logical that biography should be a major emphasis in library research. Aside from an armload of good, competent biographical studies—among them those of Marion Casey on Charles McCarthy, Edward Holley on Charles Evans, William Williamson on William Frederick Poole, Laurel Grotzinger on Katharine Lucinda Sharpe, and Edward Miller on Antonio Panizzi[22]—there are few that merit attention as more than eulogies. The recent publication of the *Dictionary of American Library Biography*[23] has helped, but the nature of a compendium of short biographical sketches cannot provide what is needed—a substantial body of work on important and even unimportant librarians that can add substantially to our knowledge of how generations of librarians viewed, performed and realized what they considered their professional role in society.

It is unfortunate that the problem of obtaining source materials for library biography is so difficult. It is even more so that the potential publishers for finished biographies are so meager. The fact is that library biography simply is unpopular. Librarians are not great warriors, inventors or movers in the world. Rather, they contribute to the innumerable decisions that accumulate to form the reputation of a library. As British library historian James G. Ollé has observed: "The public will always be more inclined to read the life of a libertine than a librarian, whatever its literary merit. Casanova was both, but not (unfortunately for library biography) at the same time."[24] We hope that most librarians are at least as "libertinarian"—or at least as interesting as the rest of humanity—but the romance of a giant is much more likely to be a commercial success than that of the common man or woman. At the 1854 conference of libararians, Charles Coffin Jewett expressed his view of the public persona of the librarian when he observed in his opening remarks that "we are not here for stately debate, for conspicuous action, much less for an exhibition of ourselves. These are things foreign from our vocation, and not congenial with our tasks."[25] The

readership of biographical work on librarians has probably found little to contradict this since then.

Library biography is such that even those who break the mold of self-effacement are seldom seen. It took sixty-two years for the story of Klas August Linderfelt to emerge from ALA's darkest closet.[26] But Linderfelt was an ALA president. Of equal interest to those who would know the mind and heart of the librarian is the tale of John W. Harbourne, librarian of the Alameda California Free Library. In 1898, Harbourne absconded with $2,300 of the library's funds to the Klondike where, after "taking up promising mining claims," he wrote back to the trustees promising "to make good all shortages within a year."[27] It must be added in defense of library education that Harbourne's preparation for this position was eighteen years' experience as a San Francisco bookseller.

Harbourne was an atypical librarian and the record is as quiet on his eventual fate as it is on that of most librarians, for most are and were committed to professional service and as unobtrusive as Jewett. Whatever the immediate implications of this unobtrusiveness, it does point to an attitude of librarians that their own records are of less value than those they keep for others.[28] A major part of the occupation of librarians is that of keeping the records of others, whether in printed form, or manuscript or whatever. Most good librarians would consider a laundry list of Albert Einstein or Henry James a major acquisition, but upon their retirement or earlier, they would discard as trash their own drafts of their speeches accepting the presidency of ALA.

The availability of primary sources and, in many cases, that of secondary sources for biographical treatment of librarians or for the treatment of an individual library is usually problematic. Few libraries keep adequate records to verify the published memoirs of a Keyes Metcalf or Sydney B. Mitchell. Libraries are excellent at keeping records of housekeeping statistics, but the information that would make history real and meaningful is too often lacking. Why was one librarian hired over another or one book purchased rather than another? What was the role of the trustees, the mayor or the faculty in selecting a library director? What were the events in the power struggle that led to the firing or resignation of the last library director? All these are basic questions in the life of any library that remain largely unanswered and usually unmentioned in the sketchy archives of most libraries. It is most unfortunate, but the situation exists that the record of the hopes and aspirations of generations of librarians has been essentially lost. It must be said, though, that this situation is not unique to library history.

To some extent this problem is being addressed by ALA/LHRT's oral history census project that seeks to compile a directory of the various oral history interviews of librarians that are held in collections around the country. It is unfortunate that these are so sparse. There is a pressing need for a coordinated oral history project that could give direction and control to the desultory efforts that have been carried on through the passing interests of library school faculty members and students. The idea has at least gotten as far as discussion at the 1983 LHRT business meeting at ALA's Los Angeles conference where Doris Cruger Dale of Southern Illinois University reported on the status of her project to compile a directory of oral history interviews of librarians.

While the possibility of interviewing the early leaders of ALA and other librarians of the time is lost, there are still many living librarians who made their professional contributions in the first half of the twentieth century. This represents a potential resource of tremendous value for the future library historian. Used in conjunction with archival materials, printed primary and secondary sources, and other oral history interviews, these promise a new horizon in resources for library history.

The recent publication of the *National Catalog of Sources for the History of Librarianship* as a supplement to the *Guide to the American Library Association Archives*[29] is a major breakthrough in the problem of identifying primary source collections for library history. This "handlist" had, of necessity, to ignore the archival collections of thousands of individual libraries, and according to Marion Casey's introduction, it had the necessarily modest purpose to "merely indicate starting places at which to begin the quest for the complete story."[30] But this and the ALA *Guide* do at least give us starting places that did not exist only a few years ago. Use of these guides coupled with logic and the serendipity that is essential to all fruitful historical searches will serve library historians as invaluable aids.

The publication in 1976 of Anne and Melbourne Jordan's author index to Cannons's *Bibliography of Library Economy* and the work of Larry Barr, Haynes McMullen and Steven Leach in *Libraries in American Periodicals before 1876*[31] have greatly eased the tedium of searching for contemporary materials of the nineteenth and early twentieth centuries. The updating of Cannons's and bringing together librarians' published efforts has made unnecessary the convoluted searches demanded by Cannons's bizarre chronological/subject arrangement. The Jordans's work has vastly expanded the usefulness of Cannons's basic bibliography. Though the Barr-McMullen-Leach bibliography has not been available long enough for adequate evaluation, it too

promises to make a major impact on our approach to the literature of nineteenth-century librarianship.

Secondary sources provide a different sort of problem. History is not a unified discipline—however, it is articulated and organized in academic institutions. It is essentially a research methodology, and secondary sources directly relating to the history of libraries, information centers and all other aspects of the field may be found anywhere. An example of this is the doctoral dissertation of Joseph Borome, the standard biography of Justin Winsor, which was done through the Political Science Department of Columbia University.[32] The recently published bibliography of Michael Harris and Donald Davis[33] has done much to bring together a broad spectrum of secondary sources from diverse disciplines. Though it is far from complete, and like any such effort has minor errors, it is a monument to the tenacity of the bibliographers. The "year's work" series of the *Journal of Library History* will act as a supplement to this most basic of bibliographies.

It must be remembered, though, that libraries are institutions that live in symbiosis with other, larger institutions. The history of these larger institutions and the bibliographic net that supports that work cannot be ignored by library historians. Thus, depending on the historian's interest, Cordasco and Brickman's bibliography of American education[34] and the various other specialized guides to institutional history must be consulted. These can be ignored by library historians only if they ignore the larger context of libraries as social institutions.

The sources, both primary and secondary, of library history are sparse in some areas and undoubtedly more difficult to access and utilize than those in many other areas of historical research. But, they do exist. While bibliographic work in recent years has made the task of the historian much simpler in identifying sources, it must be remembered that material relevant to any specific project can be found almost anywhere. Persistence in the search must continue far beyond the immediately apparent sources of information.

Publishing Library History

The researcher utilizing historical methods has one advantage over other researchers in the number of potential publishing outlets available. Most library and information science research is limited to a small number of core journals and monograph publishers in the field with only the occasional publication in outside sources of research with direct library implications and applications. History, however, is a

generalized field. Any phenomenon is fit for the historian's scrutiny, and there is little or no arcane vocabulary beyond that inherent in the subject of the study itself that would detract from the essential clarity of good historical rhetoric and research. History is accesible to the general reader, and, because of this, library history may be published in a wide variety of sources. The dedication of the November 1983 issue to library history of a magazine such as *Cobblestone: the History Magazine for Young People* points to the wide diversity in potential sources.

Reports of historical library and information science research are relevant to a wide variety of topics of interest to librarians, information specialists, and general historians; and they are published in both the established core research journals and the popular ones, indicating a broad receptiveness to the historical approach in library and information science. But library historians are not limited to these outlets. Virtually every state has its history publication—as well as many more local ones—which would be receptive to competently executed articles on library history. Regional historical journals also abound. While the national historical journals have sizable backlogs, there is nothing inherent in library and information science to prohibit publication of its history in them. Further, types-of-institution journals may serve as sources for types-of-libraries histories. Academic library history may be published in journals of higher education, school library history in elementary and secondary education journals, and special library history in various professional, occupational and trade and industry journals. Other publication interests of historians in the field can be absorbed by such specialized sources as the *Papers of the Bibliographical Society of America,* the *Journal of the American Society for Information Science* and a great number of management journals.

Conclusion

"Library history" is a rubric that covers a myriad of topics associated with libraries and other information systems. Its major form consists of the history of the traditional library, but it also includes the history of any activity or event that might be part of the domain of library and information science. The use and the users of materials, the problems of governance and employment, the production of resources collected and organized by librarians, and the role of governments in support of information activities are all legitimate concerns of library history—just as they are valid objects of other forms of research.

Of the research methodologies in library and information science, history is probably among the most popular and, probably among the least understood. The assumption is made, even on the part of those actively involved in the research that an understanding of history is a luxury compared with the more pressing problems facing the practice of library and information science. History, of course, cannot be written with any different purpose than an understanding of the immediate phenomena at hand. Any other reason for the writing will tend to cast the work in the form of propaganda rather than research. But history does have uses.

First, historical research can help establish the context in which librarians work and it can fulfill their functions in society. The status of women in librarianship, for example, has been a topic of increasing concern in recent years. To fail to understand its historical roots in society and in the establishment of librarianship as a formalized occupation in the late nineteenth century is to underestimate grossly the degree to which attitudes toward women and work have influenced the evolution of librarianship. Substantial advances in our knowledge of this important area can be made through other methods; but without historical depth, research tends to drift off into prescriptive conclusions that do not recognize the tremendous inertia of the surrounding society. The same context is important in other areas such as the status question in academic librarianship, the relationship of the school librarians to the classroom teacher, or the role of the special librarian in research and development and in management.

Second, the details of the history of libraries are significant in and of themselves. To know that a library contains a strong collection of Faulkner material may suffice for most practical purposes, but to know also that it is a public library, that it is in the Northwest serving a population of 5000 and the collection was acquired in the 1950s by a library director who was a personal friend of the author is to approach true understanding of the collection and its purpose in the library. Every library or information delivery system is the product of acquisition, personnel, facility, and other decisions that are made over time. Few collections of enduring value are built by satisfying current demands; and when librarians select some items in anticipation of future users' interests, or when they consider future generations' interests as one aspect of policy making, record keeping or collection development, librarians show their appreciation of their own history.

Lastly, history offers each librarian a direct opportunity to participate in the cooperative research effort. The writing of history requires

no facility with esoteric research tools. The proper use of sources requires care, intelligence, patience, and, frequently, pure luck. These are not talents beyond the abilities of most librarians. Further, the dispersion of resources in library history is such that individual librarians, through testing hypotheses suggested by other research on their own records, can make a significant contribution to library and information science research. The existence of numerous journals for the publication of such "little history" should serve as an encouragement. Library historians may not receive credits toward promotion through their research activities, but they can realize their professional commitment through their contribution to our greater understanding of the development of the profession.

References

1. Shera, Jesse H. "Darwin, Bacon, and Research in Librarianship." *Library Trends* 13(July 1964):147-48.

2. Elton, Geoffrey Rudolph. *The Practice of History*. Sydney, Australia: Sydney University Press, 1967, pp. 32-33.

3. Schlesinger, Arthur, Jr. "The Limits of Social Science." In *American History and the Social Sciences,* edited by Edward N. Saveth, pp. 531-32. New York: Free Press, 1964.

4. Schlachter, Gail A., and Thomison, Dennis. *Library Science Dissertations, 1973-1981: An Annotated Bibliography*. Littleton, Colo.: Libraries Unlimited, 1982, p. 376.

5. Butler, Pierce. *An Introduction to Library Science*. Chicago: University of Chicago Press, 1933, p. 84.

6. Barzun, Jacques. *Clio and the Doctors: Psycho-History, Quanto-History, and History*. Chicago: University of Chicago Press, 1974, p. 56.

7. Hexter, Jack H. "Some American Observations." *Journal of Contemporary History 2(Jan. 1967):12. (Some exceptions to this are Margaret Ann Corwin's "An Investigation of Female Leadership in Regional, State and Local Library Associations, 1876-1923." Library Quarterly* 44(April 1975):133-44, and Wayne Wiegand's unpublished work on the regional origins of the early ALA leadership.)

8. Hexter, Jack H. *Doing History*. Bloomington: Indiana University Press, 1971, pp. 18-19.

9. Kelly, Thomas. "Thoughts on the Writing of Library History." *Library History* 3(Spring 1975):168.

10. Finberg, Herbert P.R. *The Local Historian and His Theme.* An Introductory Lecture Delivered at the University College of Leicester 6 Nov. 1952). (Department of English Local History Occasional Papers, No. I) Leicester, England: University College of Leicester, 1954, p. 15.

11. Colson, John Calvin. "Speculations of the Uses of Library History." *Journal of Library History* 4(Jan. 1969):71.

12. Wilson, Louis Round, and Tauber, Maurice F. *The University Library: Its Organization, Administration and Functions*. Chicago: University of Chicago Press, 1945, p. 536.

13. Hexter, Jack H. *The History Primer.* New York: Basic Books, 1971, pp. 219-20.

14. Goldhor, Herbert. *An Introduction to Scientific Research in Librarianship.* Urbana-Champaign: University of Illinois Graduate School of Library Science, 1972, p. 98.

15. Dain, Phyllis. *The New York Public Library: A History of Its Founding and Early Years.* New York: New York Public Library and Astor, Lenox and Tilden Foundations, 1972.

16. Harris, Michael H. "The Purpose of the American Public Library: A Revisionist Interpretation of History." *Library Journal* 98(15 Sept. 1973):2509-14; Harwell, Richard, and Michener, Roger. "As Public as the Town Pump." *Library Journal* 99(1 April 1974):959-63; Dain, Phyllis. "Ambivalence and Paradox: The Social Bonds of the Public Library." *Library Journal* 100(1 Feb. 1975):261-66; Fain, Elaine. "Manners and Morals in the Public Library: A Glance at Some New History." *Journal of Library History* 10(April 1975):99-105; and Harris, Michael H. "Public Libraries and the Decline of the Democratic Dogma." *Library Journal* 101(1 Nov. 1976):2225-30. See also, Harris, Michael "The Role of the Library in Historical Perspective: A Revisionist Interpretation" (ED 071 668). Washington, D.C.: ERIC, 1973; and _____. *The Role of the Public Library in American Life: A Speculative Essay.* (Occasional Papers No. 117). Urbana-Champaign: University of Illinois Graduate School of Library Science, 1975.

17. Garrison, Dee. *Apostles of Culture: The Public Librarian and American Society, 1876-1920.* New York: Free Press, 1979.

18. Green, Samuel Swett. *The Public Library Movement in the United States 1853-1893. From 1876, Reminiscences of the Writer.* Boston: Boston Book Company, 1913; and Hamlin, Arthur T. *The University Library in the United States: Its Origin and Development.* Philadelphia: University of Pennsylvania Press, 1981.

19. Karetzky, Stephen. *Reading Research and Librarianship: A History and Analysis.* Westport, Conn.: Greenwood Press, 1982.

20. Marías, Julian. *Generations: A Historical Method,* translated by Harold C. Raley. Huntsville: The University of Alabama Press, 1967, p. 81.

21. Dewey, Melvil. "Library Employment vs. the Library Profession." *Library Notes* 1(June 1886):50-51.

22. Casey, Marion. *Charles McCarthy, Librarianship and Reform.* Chicago: ALA, 1981; Holley, Edward G. *Charles Evans: American Bibliographer.* Urbana-Champaign: University of Illinois Press, 1963; Williamson, William Landram. *William Frederick Poole and the Modern Library Movement.* (Columbia University Studies in Library Service No. 13). New York: Columbia University Press, 1963; Grotzinger, Laurel Ann. *The Power and the Dignity; Librarianship and Katharine Sharp.* New York: Scarecrow Press, 1966; and Miller, Edward. *Prince of Librarians: The Life and Times of Antonio Panizzi of the British Museum.* London: Andre Deutsch, 1967.

23. *Dictionary of American Library Biography,* edited by Bohdan S. Wynar. Littleton, Colo.: Libraries Unlimited, 1978.

24. Ollé, James Gordon Herbert. *Library History.* London: Clive Bingley. 1979, p. 62.

25. "Proceedings of the Librarians' Conference Held in New York City, September 15, 16, and 17, 1853." In *The Librarians' Conference of 1853: A Chapter in American Library History,* by George Burwell Utley and edited by Gilbert H. Doane, p. 137. Chicago: ALA, 1951.

26. Thomison, Dennis. "A.L.A. and its Missing Presidents." *Journal of Library History* 9(Oct. 1974):362-66; Wiegand, Wayne A. "The Wayward Bookman: The Decline, Fall, and Historical Obliteration of an ALA President." *American Libraries* 8(March 1977):134-37; and _____. "The Wayward Bookman: The Decline, Fall, and Historical Obliteration of an ALA President. Part II." *American Libraries* 8(April 1977):197-200.

27. "Library Economy and History." *Library Journal*24(Jan. 1899):32; and Harbourne, John W. "The Guileless West on 'Weeding Out': A Reply to Mr. Stevenson's Article." *Library Journal* 22(May 1897):252.

28. Ditzion, Sidney H. "The Research and Writing of Library History." In *Toward a Theory of Librarianship: Papers in Honor of Jesse Hauk Shera,* edited by Conrad H. Rawski, p. 65. Metuchen, N.J.: Scarecrow Press, 1973.

29. *National Catalog of Sources for the History of Librarianship.* Chicago: ALA, 1982; and Brichford, Maynard J. *Guide to the American Library Association Archives.* Chicago: ALA, 1979.

30. *National Catalog,* p. 5.

31. Jordan, Anne Harwell, and Jordan, Melbourne. *Cannons' Bibliography of Library Economy, 1876-1920: An Author Index with Citations.* Metuchen, N.J.: Scarecrow, 1976; Cannons, H.G.T. *Bibliography of Library Economy: A Classified Index to the Professional Periodical Literature...from 1876 to 1920.* (reprinted 1927). New York: Burt Franklin, 1970; and Barr, Larry J., et al. *Libraries in American Periodicals Before 1876.* Jefferson, N.C.: McFarland, 1983.

32. Borome, Joseph Alfred. "The Life and Letters of Justin Winsor." Ph.D. diss., Columbia University, 1950.

33. Harris, Michael H., and Davis, Donald. *American Library History: A Bibliography.* Austin: University of Texas Press, 1978.

34. Cordasco, Francisco, and Brickman, William W. *A Bibliography of American Educational History: An Annotated and Classified Guide.* New York: AMS Press, 1975.

Research on the Economics of Libraries

NANCY A. VAN HOUSE

ECONOMICS CAN BE DEFINED by both its subject matter and its approach. Although people tend to think of economics in connection with buying and selling, its subject, more generally, is *choices*: the allocation of resources among competing ends. Economics can be and has been applied to virtually every sphere of human behavior: not just in the market, but in such diverse areas as crime, marriage and discrimination[1]—wherever people are making choices among competing alternatives.

The essence of the economic approach is its assumptions: (1) that people generally behave rationally to maximize their utility or well-being, and (2) that they compare costs and benefits and allocate their resources, including time and money, to achieve this goal. One way in which people act to increase their utility is to trade resources in the market. Economics further assumes that the market generally, but not always, results in the allocation of goods and services that creates the greatest net benefit for all concerned. This description of the economic approach, of course, is an extreme simplification. Becker[2] and MacKenzie[3] have described the economic approach at greater length.

The economic approach can be applied to many topics and has been applied recently to a topic which includes libraries—the economies of information.

Two major research areas are subsumed to by the term *the economics of information.* One is concerned with the role that information

Nancy A. Van House is Assistant Professor, School of Library and Information Studies, University of California, Berkeley.

plays in market activities, that is, with information as an input or as an element in economic activity and decision-making.[4] The other is concerned with information as a product or output, a commodity that is produced and disseminated. Much of the research in this area deals with information services, as distinct from information itself. It consists of the application of economic tools and concepts to those organizations and individuals (including libraries, librarians, publishers, and other information services and professionals) that produce information and related products and services: the information industry.

The subject of this review is the economics of libraries, which falls under the information-as-output branch of the economics of information. Libraries produce not information but information services; that is, libraries give access to and assistance in using information. The economics of libraries is concerned with the choices that are made within and about libraries. Presumably, the goal of the library is to provide the maximum benefit to its clients, given the available resources. Decisions have to be made about which services the library will provide, to what extent and to whom; and about how best to allocate the library staff, collection and other resources among different activities to produce those services. Other decisions affecting the library are made by potential users and by funding agencies. Libraries' clients make decisions about whether to use libraries, how much and for what purposes. Funders (governments, colleges and universities, and other parent institutions) decide how much to spend on library services.

The economics of libraries is shaped in part by the unusual nature of information. Information is intriguingly different from most other commodities. For example, it is possible to sell it and keep it at the same time, because one still knows what one tells someone else. It is difficult to value information apart from the use to be made of it, meaning that the same information has different values to different people and in different contexts. Furthermore, like education, to which information is frequently compared, information also has value to people other than its immediate consumer.

Partly as a result of the unusual nature if information, many information services are tax-supported rather than being bought and sold on the market. The library manager, therefore, turns to the economist for help in making decisions that might otherwise be made by the market, or with the help of market information. The public support of library services also gives rise to questions about the proper roles of the public and private sectors in the provision of information services,

about which library services should be publicly funded, and how such services should be funded.

The present review summarizes the major applications of economic theory and research methods to libraries. Within the space available, it is impossible to cite all the relevant research on the economics of libraries—let alone that on the economics of information and information services more generally—or to do an historical survey. This review discusses the major topics in the economics of information as it has been applied to libraries and cites important or representative current research.

This review begins by describing several overviews of the economics of information and of library services. Then it considers research related to the supply of library services—that is, the mix of services and the amount of each provided. Supply decisions depend on the means by which services can be generated, and the inputs required and their costs. Next it reviews research into the demand for library services. Then it summarizes the discussions of the reasons for and the implications of tax support for libraries, and the appropriate role of user fees, important issues because so many libraries are in the public sector. Finally, to function effectively libraries need adequate numbers of skilled professionals, and so the last section reviews research into the information labor market.

Overviews

No single introductory text ot literature review adequately covers the economics of libraries. Several reviews, collections, and bibliographies, however, are available to acquaint readers with the economics of information services and libraries. The most recent is a collection of key papers on the costs,, pricing and value of information products and services edited by King, Roderer and Olsen.[5] Casper[6] provides a succinct and readable introduction to some key issues. Over the past fourteen years, the *Annual Review of Information Science and Technology* has featured three reviews of the topic: those by Cooper,[7] Hindle and Raper,[8] and Wilson.[9] Varlejs[10] has a good selected annotated bibliography. Finally, Olsen's comprehensive bibliography[11] is now dated but remains useful as a conceptualization of the field of the economics of information and as an exhaustive review of the literature up to that time.

The Supply of Library Services

In the private sector, which goods and services will be produced and how much of each depend on what consumers are willing to buy, what suppliers are willing to sell, and at what prices. When services are not sold on the market, these decisions have to be made in other ways. The library manager must decide which services to provide, how much of each, and the allocation of resources (including staff and collection) among them. This, generally speaking, is the subject of research into the supply of library services: relating benefits, outputs, and inputs to determine how the library can maximize its benefits within the constraints of its budget and available technology.

A major problem confronting the researcher is that of defining and measuring the library's outputs. Libraries provide many different services, some of which (e.g., circulation) are easier to measure than others (e.g., archiving materials against future need). Some researchers have used one output measure (usually circulation), others have used several (e.g., circulation, reference and in-house use of materials). Hamburg[12] defined the basic output of the library as hours of exposure of individuals to documents, into which he translated other measures of library use, such as circulation and reference. Bookstein[13] defines the product of the library as service potential, on the grounds that measures of output such as circulation reflect demand as much as supply. He demonstrates that this abstract nature of libarary service has stymied microeconomic analysis of the library, and that basing allocation decisions on measurable outputs such as circulation will result in inefficient decisions.

Production Functions

Research into the supply of library and information services can be divided into several major topics: the development of production functions; costing; and cost-benefit or cost-effectiveness analysis. A production function relates the mix of inputs (e.g., staff, collection, equipment) to a single measure of output (e.g., circulation). The usual procedure is to use cross-sectional data from a set of similar libraries to derive a mathematical function describing how changes in the levels of the different inputs affect the volume of output. An underlying assumnption is that the sample libraries are producing the maximum output possible with the resources at their disposal. The resulting function shows the trade-offs among different inputs at a given level of output, and gives the optimal mix of inputs to produce a defined level of output. It can be used to determine whether there are economies of scale

in production, that is, to determine the most efficient size for a library. It can also be combined with cost and budget information to determine the allocation of the organization's budget across different resources needed to maximize the outputs produced under a fixed budget, or the budget needed to produce a given level of service.

Early attempts to describe a library production function include one developed for the National Advisory Commission on Libraries by Baumol and others[14] and Goddard's[15] for a sample of Indiana public libraries. More recently, Hayes[16] has derived production functions for several groups of public libraries to optimize the allocation of resources between capital and labor for a central library, for a branch library and for a system composed of both. Hayes and Borko[17] developed a production function for of academic libraries which related faculty research productivity to collection size.

Costs, Cost Functions, and Production Functions

Costs are fundamental to economic analysis. Many studies have measured the costs of various libarary services and functions. Mick[18] concludes an extensive review of the literature on the cost analysis of information systems and services by saying that, while there is no lack of methodological tools for costing, the applications studies lack standardization and therefore reliability and external validity. He calls for more standardization so that cost data can be generalized from one library to another. His point is well-taken: the costs of a specific operation in a specific library developed for a specific purpose may have little in common with those of the same operation in another library developed for quite another purpose. It is this author's contention, however, that such generalizations are neither possible nor desirable. As Bickner[19] says, costs depend on the choice and the chooser. Which cost elements are included and how they are evaluated depends on the comparisons made.

Of more general interest are studies in which the major product is not a measure of costs but rather methods or models for costing that can be used in a variety of circumstances. For example, Palmour and his colleagues[20] present a methodology for comparing the costs of owning versus borrowing periodicals. Lawrence[21] simplified and adapted their model to collection storage decisions. Wiederkehr[22] developed a complex model for comparing the costs of different library catalog formats. The usefulness of these studies is that their methods can be translated to other situations.

In addition to measuring costs, the economist tries to understand how they are determined (and, by implication, how they can be reduced). Cost functions relate total costs to the mix of services provided, describe the effects of changes in levels of outputs on total costs and estimate the cost trade-offs among different services. Like production functions, they are used to test for economies of scale.

An interesting application of a cost function to libraries is Kantor's[23] Best Trade Off function. For samples of similar libraries, he regressed total costs on three measures of library output: circulation, reference and in-house use of materials. He then proposed[24] that the deviation of a given library's cost of operation from that predicted by the average cost function (based on its output levels) could be interpreted as its reserved capacity (if positive) or as its overload (if negative). That is, if a library is spending more than it should for a given mix of outputs, as predicted by the function, the library is assumed to have the capacity to provide more service than is being demanded of it; if its costs are low for its level of output, it is being overused.

Economies of Scale

Both cost and production functions have been applied to the question of optimal library size. The basic question is whether libraries experience economies of scale, that is, whether large libraries can provide service of a given quality at a lower cost per unit. If so, there may be an optimal size for a library of a particular type, or at least there may be reason to consolidate libraries into larger units. Either production or cost functions can be used to test for economies of scale: (1) production functions by looking at whether outputs increase faster than inputs, and (2) cost functions by comparing the rates of increase of total costs (rather than inputs) and outputs.

Several problems exist with the current research on economies of scale, including the definition and measurement of outputs and the inability to measure service quality. The research findings are inconclusive. Cooper[25] found approximately constant returns to scale among California public libraries. From a national sample of public libraries, Feldstein[26] concluded that there were slight economies of scale for larger libraries which were wiped out by the added costs of multibranch systems. Among academic libraries, Cooper found diseconomies of scale among smaller college and university libraries[27] and economies of scale among larger ones.[28] Kantor found slight diseconomies among academic libraries[29] and he found economies of scale in scientific and technical libraries.[30]

Productivity

Another consideration in cost determination is the investigation of trends in costs and productivity in libraries and information services over time. As early as 1967, Baumol and his colleagues[31] warned that the labor-intensive nature of information services would mean that their costs would increase faster than those in the economy as a whole and said that increased use of capital (e.g., equipment) could balance increasing labor costs to keep costs down. The result would be growing costs for services (including libraries) relative to the rest of the economy. They suggested that automation was the answer. Baumol and Blackman have recently noted,[32] however, that the decline in computer hardware prices has increased the share of software and other labor-intensive activities in the total cost of computing, leaving the "electronic library" in the same situation as the conventional library. Others have disagreed, however. White[33] analyzed the costs of public library services and found that there have been productivity improvements in the past, although not in the last two decades, and argued that computers offer the hope of considerable additional improvements in productivity.

What is important about this line of research is its implications for libraries' future ability to maintain service levels without exponentially increasing budgets, and its evaluations of alternative actions that might be undertaken to stave off the disasters predicted by Baumol. It is not at all clear whether libraries can expect increasing or static productivity, with or without computers. Further research is needed into the internal and external factors that affect library productivity.

Cost-Effectiveness, Cost Benefit, and Value

Decisions about the allocation of resources to and within libraries are based on comparing costs and benefits or value. As difficult as output is to measure, it is even more difficult to evaluate its worth, especially for outputs not bought and sold on the market. Cost-benefit and cost-effectiveness analysis are methods of comparing the costs and benefits of alternatives. The difference between them is the measure of value or benefit used and the uses to which such methods can be put.

Comparing library services to other, dissimilar uses of the same resources (e.g., another chemistry lab for the campus or patrol cars for the local police department) ideally requires the ability to express the costs and benefits of both activities in common units of measure. True cost-benefit analysis reduces all possible costs and benefits to dollars. Cost-effectiveness expresses the results or value of the activity in mea-

sures of effectiveness: cost effectiveness can only be used to compare alternatives that have the same objectives. For example, cost-effectivness measures can be used to compare different methods of providing the same library service. Cost-effectiveness is less general than cost-benefit, and can only be used for resource allocation decisions within the library. Cost-benefit analysis can be used to compare library services with other activities. As with cost studies, the results of cost-benefit and cost-effectiveness studies generally lack external validity; that is, they are only true for the particular situation being studied. The methods, however, can be translated to many other situations. Flowerdew and Whitehead[34] and Oldman and Willis[35] reviewed the literature on cost-benefit analysis of information services and concluded that most of what has passed for cost-benefit analysis is really cost-effectiveness; that is, benefits are not expressed in dollar terms. The reason for this is the difficulty of evaluating in monetary terms the services provided by libraries and related agencies.

Griffiths[36] reviewed the literature on the value of information and related systems, products and services. Some interesting attempts have been made at cost-benefit analysis of libraries and information centers. Mason and Sassone[37] developed a method of evaluating the benefits of information centers according to the value of the user time saved. Newhouse and Alexander[38] addressed the question of how a public library should allocate its book budget among different subject areas to maximize social benefit. They valued a book loan according to the book's purchase price and the likelihood that the user would have bought it had the library not provided it. For the New York Public Library branch system, Getz[39] derived values for each use (circulation plus in-house use of materials) from the cost to the user (in travel time and transit fare) of traveling to the next closest branch. By relating levels of use to service levels and estimating the marginal costs of different services, he could compare the marginal costs of generating additional uses through changes in the service levels to marginal benefits. Raffel and Shishko[40] asked academic library users to make direct evaluations by giving them a limited budget to allocate across a range of services, each with a price attached.

Two studies have inferred the value that library managers place on services from their past budget decisions. Hamburg and his colleagues[41] translated all measures of library output into user hours of exposure to library materials. Using national public library data, they then imputed the value of exposure hours by relating library expenditures on various services to the exposure hours that they produced. This approach

assumes that the decisions that library managers have made are, on average, optimal. Unfortunately, when Hamburg et al. found different values for groups of libraries of different sizes, they concluded that larger libraries are less efficient. They might as easily have concluded that the value of exposure hours in larger libraries (with a greater variety of services) is greater. Another *post hoc* study, at the University of Durham,[42] used a linear programming model to measure the trade-offs that library managers had made in allocating resources among services. The marginal values of various services were inputed by comparing the resources allocated to them and the levels of output that resulted.

Each of these studies has its limits, but the methods are useful beginnings to valuing library services. One major shortcoming of cost-benefit analysis is its inability to place relative values on the benefits to different groups. Raffel[43] notes that this is where economic analysis gives way to political analysis: the economist cannot tell the manager how to equate different groups' preferences.

Demand For Information Services

The demand for a good or service is a function of many factors—economic and otherwise. The analysis of the demand for library services is complicated by the fact that they are often provided at no direct monetary cost to the user. Thus, nonmonetary factors, which are difficult to identify and to measure, are that much more important in determining demand for library services.

Demand for library services can be divided into demand for the provision of the service and demand for its use. The first has to do with the factors that determine the level of library service that its parent institution chooses to support. At this point economics shades into political science, with a mutual concern for the process of collective decision-making. In public libraries, Feldstein[14] attempted to explain expenditures on public libraries as a function of community characteristics and past expenditure levels. Getz[45] related library expenditures and service levels (e.g., volumes, hours) to community characteristics and local economic conditions.

Whereas in public libraries models of the demand for provision of library services have been used to explain decisions that have already been made, in academic libraries such models have been used to guide decision-making. Severl universities, especially multicampus systems, have used a function based on campus characteristics (e.g., numbers of students and faculty and numbers of degrees offered) to determine

library budgets.[46] Generally, these functions are initially developed by analyzing past expenditure levels, on the assumption that past decisions were acceptable; and the implicit bases for these decisions can be made explicit and used to guide future budget decisions.

The other kind of demand is for use of library services. This is the subject of user studies, of which there have been many in all types of libraries (e.g., see Zweizig and Dervin[47]). This review is only concerned with those that were based on economic theory.

Feldstein[48] used consumer choice theory to relate circulation to demographic characteristics of the community as a whole and to relate circulation measures of the price, search cost and quality of library service. Getz[49] hypothesized that decisions about use and levels of service were interdependent. That is, more service (e.g., larger bookstocks) is provided where use is greatest, and vice versa. Getz's two-stage approach involves first relating levels of service to exogenous variables (e.g., cost of space and political power of an area), and then relating its use to levels of service. Van House[50] described the individual's use of the library as a function of its nonmonetary costs, which depended on the amount of user time required and its value, which varied in turn across users and uses. By placing a monetary value on nonmonetary user costs, she could also use her model to consider the effect on use of introducing fees. Casper[51] explained the number of requests originated by institutional users of medical library services as a function of the institutions' characteristics.

Finance

Because many libraries are tax-supported, an important topic within the economics of libraries is how such libraries are financed—including whether, when and how users should be charged. Public finance is that branch of economics that is concerned with under what conditions the public provision of a good or service is justified. The criteria for public provision of a good or service and the ways in which these criteria have been applied to information in general and to libraries in particular are too complex to do them justice here. However, it is possible to summarize them by stating that public intervention is justified when the nature of the good or service is such that leaving its provision to the market wwould not result in the greatest possible social benefit.

Numerous researchers have applied public finance theory to the question of whether public libraries should be publicly-supported,

among them White,[52] Goddard,[53] Getz,[54] Braverman,[55] Gell,[56] and Van House.[57] There is no consensus among them. What the reader can conclude, however, is that public support of library services is debatable, and the answers are not easy.

Little empirical research is possible in this area. Two relevant investigations, however, are those by White[58] and Weaver and Weaver[59] of the tax incidence of public library services. Both studies compared the demographics of library users to the extent to which different parts of the population pay the taxes that support the public library. Weaver and Weaver used national data; White's were for the Philadelphia Free Library. Both concluded that low-income people pay relatively heavy taxes to support the library but receive little benefit from it. Both argued that the current method of supporting public libraries is therefore basically inequitable.

Fees

The question of whether publicly-funded libraries should charge fees (and, if so, for what, and how they should go about setting them) has been of particular interest since many libraries started charging fees for online searches.[60] Most of the discussions of fees—as wwith those of public finance—are concerned with under what circumstances fees are or are not justified. Discussions of fees include those by Casper,[61] Cooper,[62] Gell,[63] Blake and Perlmutter,[64] and Van House.[65] As with the public finance discussions, no firm conclusions have been reached.

Waldhart and Bellardo[6] reviewed the literature on fees in publicly-funded libraries comprehensively and concluded that, in order to determine when and how fees should be charged, more information is needed on the impact of fees on users' access to information. Little research has been done, however, on the effect of fees on user behavior or on library services. Hicks[67] studied the Dallas Public Library's nonresident fee, and concluded that it had the intended effect of reducing use among nonresidents. Casper[68] estimated the price elasticity of demand for library services among institutional users of a medical library. Cooper and DeWath (Van House)[69] measured the effect of fees on librarians' behavior and the cost of online searches.

One of the most comprehensive discussions of fees is that by Van House[70] who reviewed the public finance basis for fees in public libraries and developed a model of demand for services into which fees can be incorporated. The model also used the value of the user's time to predict different user groups' responses to fees of different kinds. Van House did not test the model empirically, however.

The Library Labor Market

An important component of the information industry is the people that it employs. Several recent developments have shaped the research in this area. One is the imbalances experienced by the library labor market: the shortage of librarians of the 1950s and 1960s has been followed by a chronic (if low-level) surplus. Another is the development of a market for information professionals in settings other than libraries: the growth of computer-related work, in particular, has opened new possibilities for people with training in library and information science. Finally, concerns about the causes of sex differentials in career patterns and salaries within the labor force generally have raised questions about possible inequities in librarianship in particular.

The Occupational Survey of Information Professionals[71] measured and described the information profession by function and by setting, using an all-inclusive definition of an information professional. A more detailed study of the library labor market, with some reference to the nonlibrary information market, was the Library Human Resources Study, [72] which collected exhaustive descriptive information on library employment and education and developed forecasts of supply and demand based on models that relate the state of the library labor market to conditions in libraries and the economy as a whole. In this study, Cooper[73] developed further the demand modeling and Van House[74] the supply modeling. The conclusions were that that library market would probably remain fairly well balanced and stable through the 1980s, with most job openings coming from retirements and occupational transfers rather than new positions.

Van House's models of librarian supply were grounded in human capital theory, the fundamental premise of which is that people invest in themselves (through education, for example) in the expectation of future monetary and nonmonetary returns. She also calculated the return on investment in library education[75] and found that that it was negative, more so for men than for women. The differences between what librarians might have earned in other occupations and what they earn as librarians, are greater for men than for women, on average. Van House suggested that the predominance of women in the profession could be explained in part by the occupation's greater opportunity cost for men.

Another study of the library labor market, performed by Heim and Estabrook,[76] related personal, career and professional differences to salaries for a sample of American Library Association members. Heim

and Estabrook found differences between the salaries of men and women that remained statistically significant after factors other than gender had been taken into account.

Conclusions and Implications

Research on the economics of libraries and information services began in the mid-190s with the work done by Baumol and his colleagues for the National Advisory Commission on Libraries.[77] Since that time, economic theory and methods have contributed significantly to our understanding of library services and operations. They have also pointed toward future problems and opportunities that will require attention from library and information science researchers.

This review has suggested some areas where more research is needed. One such area is the definition and measurement of library outputs, including measures of service quality as well as quantity. Another is that of value. Many different approaches to valuing libarary services have been proposed: can one best method be identified? Some researchers have tackled the problem of measuring the information industry's contribution to the economy as a whole.[78] Is it possible to measure the economic effects of libraries of various sorts, as others have measured the contributiobn of a variety of education programs to the Gross National Product? A more manageable problem, perhaps, is that of developing cost and production functions when the library's output is more readiness to serve than actual (measurable) services provided. And more research is required on the pragmatic problems of relating service levels to inputs and costs. The question of whether there is an optimal size for libraries of various sorts has yet to be fully answered. Another area in need of attention is demand for library services. The current demand functions explain only a small part of the observed variation: more systematic research is needed into the determinants of demand for both service provision and use in all types of libraries. If an increased us of fees is in the future of many libraries, as some have predicted, then more information is needed on the effects of fees on users and librarians, and on how to set fees in conformity with the library's goals. Finally, more information is needed on the dynamics of the information labor market if libraries are to be sure to have qualified staff in adequate numbers and librarians are to have jobs.

This list of research needs is just a beginning. Economics is a large and diverse field, and its possible applications to information and to library services many and varied. Library researchers can take their cue

from researchers in such fields as the economics of education and the economics of health services, where many problems have proven amenable to economic analysis.

Research into the economics of information, however, has suffered from the lack of a critical mass of researchers in this area. As is true of research generally, progress requires a community of people with similar interests and expertise to stimulate and critique one another's work. Much of the economic research on library issues has consisted of one or, at best, a very few studies, with little continuity and few attempts to build on previous work. One reason for this lack—as in other areas where the conceptual base of another discipline is being applied to libraries—is that good research requires that investigators have expertise in both subject areas. Ideally, research into the economics of libraries would be a contribution to both disciplines: not just a functional application of long-standing economic theories and methods to libararies, as much of the research cited in this review has been, but also research that expands our understanding of economics in the process of applying and adapting it to libraries.

References

1. See, for example Becker, Gary S. *The Economic Approach to Human Behavior.* Chicago: University of Chicago Press, 1976.

2. Ibid.

3. McKenzie, Richard B. "The Economist's Paradigm." *Library Trends* 28(Summer 1979):7-24. Also in *Key Papers in the Economics of Information,* edited by Donald W. King, et al., pp. 136-53. White Plains, N.Y.: Knowledge Industry Publications, 1983.

4. For a review of this topic, see Spence, A. Michael. "An Economist's View of Information." In *Annual Review of Information Science and Technology,* vol. 9, edited by Carlos A. Cuadra and Ann W. Luke, pp. 57-78. Washington, D.C.: American Society for Information Science, 1974.

5. King, Donald W., et al. *Key Papers in the Economics of Information.* White Plains, N.Y.: Knowledge Industry Publications, 1983.

6. Casper, Cheryl A. "Economics and Information Science." In *Information Science in Action: System Design* (Proceedings of the NATO Advanced Study Institute on Information Science, Crete, Greece, 1-11 Aug. 1978), edited by Anthony Debons and Arvid G. Larson, vol. II, pp. 565-72. Boston: Nijhoff, 1983.

7. Cooper, Michael D. "The Economics of Information." In *Annual Review of Information Science and Technology,*vol. 8, edited by Carlos A. Cuadra and Ann W. Luke, pp. 5-40. Washington, D.C.: American Society for Information Science, 1973.

8. Hindle, Anthony, and Raper, Diane. "The Economics of Information." In *Annual Review of Information Science and Technology,* vol. 11, edited by Martha E. Williams, pp. 27-54. Washington, D.C.: American Society for Information Science, 1976.

9. Wilson, John H., Jr. "Costs, Budgeting, and the Economics of Information Processing." In *Annual Review of Information Science and Technology,* vol. 7, edited by Carlos Cuadra and Ann W. Luke, pp. 39-68. Washington, D.C.: American Society for Information Science, 1972.

10. Varlejs, Jana, ed. *The Economics of Information.* Jefferson, N.C.: McFarland & Co., 1982.

11. Olsen, Harold A. "The Economics of Information: Bibliography and Commentary on the Literature." *Information-Part 2* (March-April 1972):1-26.

12. Hamburg, Morris, et al. *Library Planning and Decision-Making Systems.* Cambridge, Mass.: MIT Press, 1974.

13. Bookstein, Abraham. "An Economic Model of Library Service." *Library Quarterly* 51(Oct. 1981):410-28.

14. Baumol, William J., et al. "The Cost of Library and Informational Services." In *Libraries at Large: Tradition, Innovation, and the National Interest,* edited by Douglas M. Knight and E. Shepley Nourse, pp. 168-227. New York: R.R. Bowker, 1969.

15. Goddard, Haynes C. "Analysis of Social Production Functions: the Public Library." *Public Finance Quarterly* 1(April 1973):191-204.

16. Hayes, Robert M. "The Management of Library Resources: the Balance Between Capital and Staff in Providing Services." *Library Research* 1(March 1979):119-42.

17. Hayes, Robert M., and Borko, Harold. "Mathematical Models of Information System Use." *Information Processing and Management* 19(no. 3, 1983):173-86.

18. Mick, Colin K. "Cost Analysis of Information Systems and Services." In *Annual Review of Information Science and Technology,* vol. 14, edited by Martha E. Williams, pp. 37-64. White Plains, N.Y.: Knowledge Industry Publications, 1979.

19. Bickner, Robert E. "Concepts of Economic Cost." In *Cost Considerations in Systems Analysis,* edited by Gene H. Fisher, pp. 24-63. New York: Elsevier North-Holland Inc., 1971. Also in *Key Papers in the Economics of Information,* pp. 10-49.

20. Palmour, Vernon E., et al., *Costs of Owning, Borrowing, and Disposing of Periodical Publications.* Arlington, Va.: Public Research Institution, 1977.

21. Lawrence, Gary S. "A Cost Model of Storage and Weeding Programs." *College & Research Libraries* 42(March 1981):139-47.

22. Wiederkehr, Robert R. V. *Alternatives for Future Library Catalogs: a Cost Model.* Rockville, Md.: King Research, Inc., 1980.

23. Kantor, Paul B. "Cost and Productivity in Library Operations." In *Productivity in the Information Age* (Proceedings of the 46th ASIS Annual Meeting, vol. 20, Washington, D.C., 1983), edited by Raymond F. Vondran, et al., pp. 297-300. White Plains, N.Y.: Knowledge Industry Publications, 1983; "Levels of Output Related to Cost of Operation of Scientific and Technical Libraries." *Library Research* 3(Spring 1981):1-28; and _____. "Levels of Output Related to Cost of Operation of Scientific and Technical Libraries: Part II. A Capacity Model of the Average Cost Formula." *Library Research* 3(Summer 1981):144-54.

24. _____, "Cost and Productivity."

25. Cooper, Michael D. "Economics of Library Size: A Preliminary Inquiry." *Library Trends* 28(Summer 1979):63-78.

26. Feldstein, Kathleen Foley. "The Economics of Public Libraries." Ph.D. diss., Massachusetts Institute of Technology, 1976.

27. Cooper, Michael D. "Economies of Scale in Academic Libraries." *Library and Information Science Research* 5(Summer 1983):207-19.

28. _____. "Economics of Scale in Large Academic Libraries." (unpublished manuscript,) University of California at Berkeley, 1983.

29. Kantor, "Cost and Productivity."

30. _____. ,"Levels of Output."

31. Baumol, et al, "The Cost of Library and Informational Services"; and Baumol, William J., and Marcus, Matityhau. *Economics of Academic Libraries.* Washington, D.C.: American Council on Education, 1973.

32. Baumol, William J., and Blackman, Sue Anne Batey. "Electronics, the Cost Disease, and the Operation of Libraries."*JASIS* 34(May 1983):181-91.

33. White, Lawrence J. *The Public Library in the 1980's: the Problems of Choice.* Lexington, Mass.: Lexington Books, 1983.

34. Flowerdew, A.D.J., and Whitehead, C.M.E. *Cost-Effectiveness and Cost/Benefit Analysis in Information Science.* London: London School of Economics and Political Science, 1974.

35. Oldman, Christine, and Wills, Gordon. *The Beneficial Library.* Bradford-West Yorkshire, England: MCB Books, 1977.

36. Griffiths, José Marie. "The Value of Information and Related Systems, Products, and Services." In *Annual Review of Information Science and Technology,* vol. 17, edited by Martha E. Williams, pp. 269-84. White Plains, N.Y.: Knowledge Industry Publications, 1982.

37. Mason, Robert M. and, Sassone, Peter G. "A Lower Bound Cost Benefit Model for Information Services." *Information Processing and Management* 14(no. 2, 1978):71-83.

38. Newhouse, Joseph P., and Alexander, Arthur J. *An Economic Analysis of Public Library Services: Prepared for the City of Beverly Hills.* Santa Monica, Calif.: Rand Corporation, 1972.

39. Getz, Malcolm. *Public Libraries: An Economic View.* Baltimore, Md.: Johns Hopkins University Press, 1980.

40. Raffel, Jeffrey A., and Shishko, Robert. *Systematic Analysis of University Libraries: An Application of Cost-Benefit Analysis to the MIT Libraries.* Cambridge, Mass.: MIT Press, 1969.

41. Hamburg, et al., *Library Planning.*

42. University of Durham. *Project for Evaluating the Benefits from University Libraries: Final Report.* Durham, England: University of Durham, 1969.

43. Raffel, Jeffrey A. "From Economic to Political Analysis of Library Decision Making." *College & Research Libraries* 35(Nov. 1974):412-23.

44. Feldstein, "Economics of Public Libraries."

45. Getz, *Public Libraries.*

46. See, for example, Clapp, Verner W., and Jordon, Robert T. "Quantitative Criteria for the Adequacy of Academic Library Collections." *College & Research Libraries* 26(Sept. 1965):371-90.

47. Zweizig, Douglas, and Dervin, Brenda. "Public Library Use, Users, Uses: Advances in Knowledge of the Characteristics and Needs of the Adult Clientele of American Public Libraries." In *Advances in Librarianship,* vol. 7, edited by Melvin J. Voight and Michael H. Harris, pp. 232-55. New York: Aacdemic Press, 1977.

48. Feldstein, "Economics of Public Libraries."

49. Getz, *Public Libraries.*

50. Van House, Nancy A. *Public Library User Fees: the Use and Finance of Public Libraries.* Westport, Conn.: Greenwood Press, 1983; and _____. "A Time Allocation Theory of Public Library Use." *Library and Information Science Research* 5(Summer 1984):365-84.

51. Casper, Cheryl A. "Estimating the Demand for Library Service: Theory and Practice." *JASIS* 29(Sept. 1978):232-37. Also in *Key Papers in the Economics of Information,* pp. 179-84.

52. White, *The Public Library in the 1980's.*

53. Goddard, "Analysis of Social Production Functions."

54. Getz, *Public Libraries.*

55. Braverman, Miriam. "From Adam Smith to Ronald Reagan: Public Libraries as a Public Good." *Library Journal* 107(15 Feb. 1982):397-401.

56. Gell, Marilyn Killebrew. "User Fees I: the Economic Argument." *Library Journal* 104(1 Jan. 1979):19-23; and _____. "User Fees II.: the Library Response." *Library Journal* 2(15 Jan. 1979):170-73.

57. Van House, *Public Library User Fees.*

58. White, *The Public Library in the 1980's.*

59. Weaver, Frederick Stirton, and Weaver, Serena Arpene. "For Public Libraries the Poor Pay More." *Library Journal* 104(1 Feb. 1979):352-55.

60. See, for example: DeWath, Nancy Van House. "Fees for Online Bibliographic Search Services in Publicly-Supported Libraries." *Library Research* 3(Spring 1981):29-45.

61. Casper, Cheryl A. "Pricing Policy for Library Service." *JASIS* 30(Sept. 1979):304-09.

62. Cooper, Michael D. "Charging Users for Library Service." *Information Processing and Management* 14(no. 6, 1978):419-27.

63. Gell, "User Fees I."; and ———, "User Fees II."

64. Blake, Fay M. and Perlmutter, Edith L. "The Rush to User Fees: Alternative Proposals." *Library Journal* 102(1 Oct. 1977):2005-10.

65. Van House, *Public Library User Fees.*

66. Waldhart, Thomas J., and Bellardo, Trudi. "User Fees in Publicly Funded Libraries." In *Advances in Librarianship,* vol. 9, edited by Michael H. Harris, pp. 31-61. New York: Academic Press, 1979.

67. Hicks, Donald A. "Diversifying Fiscal Support by Pricing Public Library Services a Policy Impact Analysis." *Library Quarterly* 50(Oct. 1980):453-74.

68. Casper, "Estimating the Demand for Library Services."

69. Cooper, Michael D., and DeWath, Nancy A. "The Effect of User Fees on the Cost of On-Line Searching in Libraries." *Journal of Library Automation* 10(Dec. 1977):304-19. Also in *Key Papers in the Economics of Information,* edited by Donald King et al., pp. 163-178.

70. Van House, *Public Library User Fees.*

71. Debons, Anthony., et al. *The Information Professional: Survey of an Emerging Field.* New York: Marcel Dekker, 1981.

72. King Research, Inc. *Library Human Resources: A Study of Supply and Demand.* Chicago: ALA, 1983.

73. Cooper, Michael D. "Projections of the Demand for Librarians in the United States." *Library Quarterly* (in press).

74. Van House, Nancy A. "Projections of the Supply of Librarians." *Library Quarterly* (in press).

75. ———. "The Return on the Investment in Library Education." *Library and Information Science Research* (in press).

76. Heim, Kathleen M., and Estabrook, Leigh S. *Career Profiles and Sex Discrimination in the Library Profession.* Chicago: ALA, 1983.

77. Baumol, et al., "The Cost of Library and Informational Services."

78. Rubin, Michael Rogers, and Taylor, Elizabeth. "The U.S. Information Sector and GNP: An Input-Output Study." *Information Processing and Management.* 17(no. 4, 1981):163-94; Rubin, Michael Rogers, and Sapp, Mary E. "Selected Roles of Information Goods and Services in the U.S. National Economy." *Information Processing and Management* 17(no. 4, 1981):195-213; Machlup, Fritz. *The Production and Distribution of Knowledge in the United States.* Princeton, N.J.: Princeton University Press, 1962; and Porat, Marc Uri. *The Information Economy: Definition and Measurement,* 9 vols. Washington, D.C.: U.S. Dept. of Commerce, USGPO, 1977.

This Page Intentionally Left Blank

Political Science: Utility for Research in Librarianship

JANE ROBBINS-CARTER

The Nature of Political Inquiry

IN THE VERNACULAR, political inquiry asks the deceivingly simple question: Who gets what? More formally, political inquiry asks: What results from the "binding allocations of values"[1] that are made within the various systems of organized society known as states? States are the fundamental units which political scientists study, while the binding allocations of values are the process outcomes which political scientists seek to understand. States are defined as those units within societies which function to : (1) establish both internal and external order, (2) promote individual welfare, and (3) promote the general welfare. These societal units have five attributes which serve to characterize them: identifiable population, territory, government, sovereignty, and independence; therefore, each state composing the United States is a state, but so are counties and a large number of other societal units. Binding allocations of values are made manifest through the laws and administrative regulations which are made by states.

In order to study the characteristics of states, and of laws and administrative regulations, political scientists use a variety of units of analysis to focus their research. Examples of these units of analysis are: action, culture, system, decision, law, rule, policy, communication network, power structure, and group. In the final analysis, what fuels the political scientist's inquiry is a desire to understand the characteris-

Jane Robbins-Carter is Professor and Director of the School of Library and Information Studies, University of Wisconsin—Madison.

tics and interactions which play a role in, that cause, and/or that predict the outcomes which result from the authorized allocations made by the states. In order to develop that complex understanding, however, political scientists may study narrow questions such as:

—What decision-making processes were used in ancient cultures or are used in primitive cultures?
—What groups or persons benefit or are penalized by tax law in Montana or the western states?
—Who participates in the power structure within the executive branch of county governments and do the participants act across multiple issue areas.
—Do participants change significantly according to the issue on the agenda?
—Does the percentage of citizens registered to vote in communities correlate with positive results of library board issues?

"The study of politics has no clear boundaries and is not clearly differentiated from other social sciences."[2] As a social science, political science may, for example, study the decision-making role of a person (normally the domain of psychology), the effect of a judicial decision (normally the domain of law), the effect of an administrative decision on the structure of a state's welfare department (normally the domain of public administration) or the policy-making role of a neighborhood organization (normally the domain of sociology). Generally, the factor which differentiates the political scientist's study is that the ultimate purpose of the study is to provide evidence in order to determine *who benefits from official/legal/authoritarian allocations* and, further, what difference those allocations make in societies.

Frameworks for Understanding Political Science

There are at least several conceptual frameworks which could be constructed to aid in organizing and understanding political science research. One such framework could be developed from the primary units of analysis used in political science studies; for example, a partial framework could be developed that would focus upon two groups of political process studies, power studies and policy studies.[3] Power studies would be those that raise questions related to the distribution of power within states. For example, power studies ask questions such as: how power relates to control over policies; the effect on private or public interests of the distribution of power; competition or cooperation

between public and private power sources; power used directly or indirectly, formally or informally; or with intended or unintended results; or whether power is or is not used. Attributes of power itself and concepts which are closely related to power—such as authority, influence and manipulation—are also studied by political scientists.[4]

Power-focused studies have divided those political scientists who study power structures and/or the individual participants involved in decision-making into elitist and pluralist theoretical camps. Simplistically, power elitists claim to have identified interlocking groups of individuals who determine what the agenda items will be in the political arena, while pluralists claim that the variety of issue areas on the agenda have identified a widely spread and diverse number of actors.[5] The genesis of the controversy is most often attributed to the findings of two frequently cited studies, Floyd Hunter's *Community Power Structure* (Chapel Hill: University of North Carolina Press, 1953) and Robert A. Dahl's *Who Governs?* (New Haven: Yale University Press, 1961).

An ancillary question related to the elitist/pluralist question is: What issue(s) or what group(s) are particular actors or groups of actors *representing* at any specific time? An important group of political science studies deals with the appropriate factors or attributes which validly measure just who or what is being represented. As an example of the complexity of this question, one could take the demographic variable of race as a measure of represention. For example, a black public library board member could be (and has been) determined, on the basis of this single demographic variable, to be representing the black community. An additional variable such as occupation (the specific black board member being studied might be a physician or lawyer—a typical occupation for board members regardless of race) could be a more significant variable in terms of representation in the context of public library governance. The single attribute of race may not be an important operative factor in this board member's representational role.[6]

On the other side of this power/policy framework is policy study. Policy studies examine public problems—how they get to the agenda of government (these studies are obviously closely related to issue area power studies) how they are acted on there, how solutions are applied, and what happens as a result of these events.[7] Policy studies focus on one or more of ten activities related to policy: (1) perception, (2) definition, (3) aggregation/organization, (4) representation, (5) formulation, (6) legitimation, (7) application/administration, (8) reaction, (9) evaluation/appraisal, and (10) resolution/termination.[8] Any specific policy under study might never develop past the perception activity or could

proceed only so far as the formulation activity before it vanished from the political agenda either for a year or a decade or more. As is the case with power studies, considerable complexity enters into the further analysis of policy. One group of studies in the policy arena focuses upon highly diffuse areas of policy outcomes such as foreign policy. Another group focuses on narrow technical policies such as telecommunications policy.[9]

Another aspect of policy analysis concerns itself with the type of value system with which a policy is most concerned. Oliver Williams, in a particularly compelling discussion, classifies policies as those which are developed to maintain the state's system—e.g., sewers and roads—and those developed to support the life-style values of states—e.g., libraries, museums and schools.[10]

Still another factor related to policy analysis is the degree to which policy development is accomplished, or the degree to which policy laws and regulations operate, in a more centralized or more decentralized manner. Education policy is often studied focusing upon what policy aspects are centralized—e.g., federal education policy—and what aspects are decentralized—e.g., state and local education policy.[11]

The key to a refinement of this simple dichotomous power/policy framework for understanding political science studies (which has already been shown to be not particularly simple) is to classify the studies undertaken based upon the definitions of power and policy utilized in them. As in most social science fields, definition of concepts varies considerably. It would be difficult to develop consensus for a classification of research studies even at this broad level of power and policy studies because the domains of both types merge with one another conceptually.

A conceptual framework for organizing and understanding the field of political science which may be more easily agreed upon is an historical approach. This type of framework could look at studies through their chronological appearance and determine periods during which identifiable analytical foci predominated.[12] Two generally accepted frameworks of the historical type (if any frameworks can be identified as "generally accepted" in the social sciences) classify studies in political science as at first historical and ethical followed later by empirical studies. Another, but fundamentally similar framework identifies the earliest studies as institutionally based, followed more recently by behavioral or process-based studies. In examining research in librarianship which utilizes political science, the institutional/behavioral framework will be used.

Institutionally Focused Political Studies in Librarianship

Carleton Joeckel's *The Government of the American Public Library*[13] is often cited as the first significant analysis of libraries in the political process. He described, analyzed and evaluated the position of the public library in the structure of government in the United States. He concluded that there was no required correspondence between forms of municipal government and types of library governance. He also concluded that there was no single pattern by which to classify public library boards based upon the powers authorized for these boards. Six years later, in 1941, Eliza A Gleason[14] analyzed the legal basis of free public library service to blacks in the south by examining their rights, first under the Constitution and the laws of the United States and then at the level of state law and the point of local library control. Two years later, Gwaldys Spencer's excellent history of the Chicago Public Library[15]—published in 1943—traced the development of Illinois state law related to libraries and analyzed in detail the relationships of Chicago's public library to the city's municipal government. Spencer's work is cited here as one example of a relatively large number of historical studies which include some analysis of the legislative foundation for the development of a specific library.

Oliver Garceau's seminal volume, *The Public Library and the Political Process,* was created as part of the late 1940s' "Public Library Inquiry" and is probably the most cited work of a political nature in the field.[16] This study is one of the early empirically-focused studies in librarianship. In site visits ranging from two to ten days, Garceau and his colleagues studied fifty libraries in incorporated municipalities, ten county library systems, and twenty-two state library agencies. Nine topics were used to organize the study: (1) history, (2) governing authority, (3) the librarian as chief executive, (4) the library in the group life of the community, (5) relationships with schools, (6) budget, (7) librarians' participation in and attitudes toward professional organizations, (8) working relations with state library agencies, and (9) relations with other units of library service. Garceau concluded:

> By and large public libraries are not thinking of themselves as employees of government or department heads in a public bureaucracy....It is the conclusion of our research that it is of paramount importance...that public librarians understand and appreciate more clearly the political world of the public library.[17]

An interesting non-United States study of libraries in the political process was done by John E. Pemberton, who studied public libraries in

England and Wales from 1850 to 1970.[18] Pemberton found that there were a few studies of municipal services that included libraries and that this was due to the ambivalent role of public libraries; i.e., it was not clear whether the public library is an educational, recreational or leisure service.[19] Pemberton's study—which looks primarily at the legislative development of libraries—also includes the political role played by the Library Association in the development of libraries.

Although most studies in librarianship which use a political focus concentrate on public libraries, there are a small number which analyze academic libraries.[20] Also, there are a number of studies which examine either the role of state government related to libraries or the role of the state library agency as a unit of state government. Beach's study[21] is an example of the first type and Monypenny's study[22] and the study by The Nelson Associates [23] are examples of the second type. Another study of the second type was completed by Bruce Shuman. Shuman tested the validity of an earlier study of state library agencies which indicated that such agencies, if administratively placed in state departments of education, received higher funding levels than agencies placed in other administrative arrangements.[24] Shuman concluded that placement of a state library agency in an education department tends to have a favorable effect upon funding levels for the agency.

Behaviorally-Focused Political Studies in Librarianship

"Power" as the Concept Analyzed

Dürr[25] completed a case study of Baltimore's information environment to assess the role played by information in the political process as it relates to the exercise of power. He posits that there are four aspects of enhanced access to power created by control of information: (1) freedom to utilize and manipulate information in any applicable area; (2) freedom to spread or withhold information in relation to any recipient chosen; (3) freedom to choose the time to reveal information to the recipient(s) of choice; and (4) freedom to deal with information in a way that makes it possible to accept, reject or modify projects, programs, etc.[26] Dürr's work borrows appropriately from studies of both power elitists and pluralists and relies heavily on the seminal work of Amatai Etzioni, *The Active Society* (New York: Free Press, 1968).

A theoretical rather than empirically-based study, also borrowing heavily from Etzioni, was done by Richard A. V. Diener.[27] Diener, like Etzioni and Dürr, suggests that power requires control over information and that politics in bureaucratic societies is based on information control. Power emanates from differential access to strategic resources.

Edward N. Howard[28] provides librarians with a framework for analyzing local interest groups, and he suggests processes through which community librarians can activate sources of local power for the benefit of libraries.

In another study which focuses on management research findings, Virginia Schein[29] examines the possible impact of sex-role stereotyping in libraries. Schein sees sex-role stereotyping as functioning to exclude women, "from the power and political networks within the organization,...[thereby limiting] ability to develop power acquisition behaviors."[30]

A final example of a library-based study using power as a unit of analysis is Pauline Wilson's study of the uses of information in leadership in the community.[31] Wilson used Berelson[32] as the source for her empirical study's question. Berelson stated that even though a minority of adults used the public library, if that minority was a particularly important segment of the community in terms of community leadership, then the public library could argue that its services had a special significance. (In other words, the public library is thus serving some members of a community's power elite.) Wilson found that while community leaders did *not* use the public library for their leadership area information needs, these leaders were in fact "a communications elite."[33] Further, the communications elite in the community was found demographically to resemble the public library's public.[34]

"Representation" as the Concept Analyzed

Both Joeckel[35] and Garceau[36] described the characteristcs of public library board members. More recent studies have attempted to determine whether there has been a change in the demographic characteristics of these board members since the 1930s and 1940s. Prentice,[37] Robbins[38] and White[39] all find that, demographically, public library board members have changed little.

Prentice's study concentrated on the degree to which public library board members were active politically. She determined that in 1970 board members were not particularly active, "but more than half do participate in non-partisan activities such as conservation and education."[40] Further, she determined that: "Boards of trustees, the majority of whose members were *active,* had no greater success in obtaining higher levels of funding than those boards whose members saw their role in a *less active* fashion, although in some individual libraries there was a relationship between trustee role perception and level of funding."[41] Prentice's study was based upon the membership of boards in thirty-six libraries serving communities with populations from 60,000

to 150,000 located in Massachusetts, Michigan, New Jersey, New York, and Pennsylvania.

Robbins's study, conducted in the early 1970s, was based on a national stratified random sample of public libraries, and it attempted to determine whether these libraries were seeking representation from nontraditional publics through the use of advisory committees. Public library board members were identified as predominantly made up of traditional members and "citizen participation in any form other than the traditional library board is a phenomena which has not impacted the public library."[42]

White's article is a review of some of the research on lay citizen boards in library governance. She suggests that further study should be undertaken regarding whether there are trends in (1) the elimination of public library boards, (2) making these boards advisory rather than policy making, and (3) broadening the representation of members of library boards if boards are to be maintained.[43]

All of these studies measure representation in only its most simplified form. None of them address the complex characteristics of representation identified by Pitkin.[44] Representation, as is true of the other units of politically-based analysis identified in this article, is a fruitful source of research related to the governance of all types of libraries.

"Voting" as the Concept Analyzed

Voting studies have formed a large portion of the research undertaken by political scientists, but only a very small portion of the studies undertaken in librarianship. While it is to be hoped that many local librarians have completed studies of their community's voting patterns and it is known that many state library association committees have undertaken studies of state legislators' votes on library laws, few of these studies appear in library literature.

Guy Garrison's work[45] and that of Lindahl and Berner[46] are two examples of library research centered on voting as the unit of analysis. Garrison concluded, "that the public library, when it must seek financial support at the polls, is the victim not so much of opposition, as of apathy."[47] He also identified that: "Areas [defined in terms of census tracts] high on the occupation and education indices, as well as on home ownership, were favorable to the library bond issues, while areas high on home ownership, but lower on the education and occupation indices were unfavorable."[48] The Lindahl and Berner study produced similar results.

It seems apparent that voting studies could provide librarians with much useful information about political behavior related to funding of public services. An analysis of the many local and state studies which have been done with a focus on educational funding could provide valuable information to librarians.

It seems logical to assume that librarians have studied voting patterns on the local level in connection with library-related issues on the local ballot. But reports of such studies rarely appear in print. Perhaps librarians believe that publishing local studies and analyzing such studies regionally or nationally will produce no meaningful results. Or perhaps they have simply not considered the larger question of regional or national analysis and believe that their studies, if they have been done, have only local significance and use.

"Policy" as the Concept Analyzed

Perhaps the most studied unit of analysis in political science today is policy. Of course, policy studies have been undertaken for decades, even in librarianship, but during the 1970s policy studies became a principle focus of political research.

A policy study in librarianship, dating from 1944, includes case studies of South Carolina and Minnesota concerned with the impact of the library assistance projects undertaken through the Works Progress Administration in 1940-41. This program was the first federal involvement in the provision of local library service, and the study also is the first of its kind.[49]

In the late 1960s, Nyquist[50] examined the effect on public library service of the federal government's new policies related to poverty and prejudice. He concluded that these new federal policies should create an emphasized educational goal for public libraries, as that goal would serve to enhance individual benefits for the common good of society. Nyquist's study is only one example of several library policy-based studies undertaken in the 1960s.[51]

As the involvement of the federal government in library policy matured and was sustained, several studies of federal library policy were undertaken during the 1970s. One study was completed by the System Development Corporation (SDC) under a grant from the U.S. Office of Education,[52] and another by an experienced state librarian, Joseph Shubert.[53] The SDC study analyzes federal policy and recommends changes, while the Shubert study describes the impact of federal funding.

A major policy study related to state library agencies was undertaken by St. Angelo and others[54] and used an empirical approach. This

policy analysis studied eighty-two quantitative variables including, for example, population density, Democratic percentages in the houses of state government, total general state revenue, general expenditures on education, voter participation in gubernatorial elections, and state library expenditures. The authors concluded in part that:

> State library agencies vary greatly in form of program and mode of operation. The support extended to the library program—whether from the legislative or executive branch, professional organizations, or the grass roots level—varies from state to state, as do the form of agencies. Yet, the study found that these support differences did not relate to the environmental characteristics of the state in any meaningful way when states were grouped on the basis of their similar characteristics. Surprisingly, the results of our analyses reveal that libraries and persons concerned with library programs operate free of the environmental restraints imposed on other agencies whose programs are more visible to the public or are more pronounced in their effect.[55]

The most significant study of federal library policy conducted during the 1970s was done by R. Kathleen Molz.[56] Molz attributed the decline in federal support for libraries in the 1970s to "the seeming lack of focus of the library program on priorities of national importance such as the equalization of educational opportunity; the absence of hard data to substantiate the social utility of libraries; and the lack of visibility of libraries within the educational arena and particularly within the Office of Education itself."[57] Her analysis of policy led Molz to maintain that the purposes of the federal role in library policy should not be related to library extension and development, but rather to (1) policy research, (2) systematic experimentation, and (3) interlibrary and interinstitutional cooperation.[58]

One portion of policy research in political science focuses on outputs and outcomes. Within public librarianship, the movement toward studying outputs (i.e., what libraries produce) is a major shift of real significance in the field.[59] The impact of having a tool for measuring library outputs is not yet known; however, the high degree of interest in these measures demonstrated by librarians working in all types of libraries augurs well for their widespread adoption.

"If outputs are what governments produce, outcomes are the grand design which citizens see behind those outputs."[60] In *Urban Outcomes*, Levy, Mettsner and Wildavsky studied "the government's distribution of goods and services to the citizens of Oakland, California...how such agencies...allocate their outputs among groups in the city, and what makes the agency allocate its outputs as it does."[61] In the part of their

study dealing with the public library they determined that low income areas of Oakland received less than an equitable share of library expenditures based upon the percent of tax revenues collected from them. For the library they state, "the dominant force shaping allocations is clearly the professional norms of the personnel....Their outputs lead to outcomes that rank employees above patrons, the central library above branches, and salaries above books. Neither rich nor poor do as well as they might, but the poor end up worse because they start with less."[62]

By using output measures for libraries, librarians during the mid- to late-1980s may be able to study library outcomes. Outcomes are the most accurate measure of the binding allocations of values which political processes produce.

A Brief Comment on Methodology and Design

The data collection methods and research designs used in political science research are the general methods and designs used in all social science research (e.g., methods such as questionnaires, interviews, observations [either unobtrusive or obtrusive], and designs that are historical, survey or experimental). Some methods are closely allied with political science research, such as gaming as a type of simulation, but method is not essential to defining what political science is. The essential definitional question is not method, but rather the question which the research attempts to answer. While method and design will determine whether a specific study is scientific research, it is the nature of the question which defines a study as political.

Explanations of the Dearth of Politically-Based Research

Historically the culture of librarianship has not been oriented toward the systematic search for new knowledge. Many librarians require neither theory nor research as necessary bases for valid knowledge. The knowledge base of librarianship has been developed predominantly from previous practice, authoritative pronouncement or intuition. Perhaps because the majority of working librarians and those now entering the field lack undergraduate majors or minors in either the natural/physical sciences or in the social sciences, librarianship remains a field relentlessly oriented to practice and bereft of research studies, despite the growing research sophistication and production in the field. Doctoral programs in library schools have emerged and grown dramatically since 1965—the date of the inception of the Higher Education Act, Title II-B doctoral fellowships[63]—and correspondingly, the

number of Ph.D. library school faculty members trained in research methodology has risen.[64] However, the curriculum content of the schools continues to lack a research orientation.

In addition to its historically nonresearch orientation, librarianship has conceived of itself as importantly apolitical. Through a misunderstanding of the ubiquitous nature of political life in a bureaucratic society, and by equating nonpartisanship with nonpolitical behavior, librarians have eschewed "things" political. Again, as Garceau stated in 1949:

> By and large, public librarians are not thinking of themselves as employees of government or department heads in a public bureaucracy....It is the conlusion of our research that it is of paramount importance...that public librarians understand and appreciate more clearly the political world of the public library.[65]

Garceau's observations about public librarians are generally believed to be true of librarians working in other publicly supported institutions.

Conclusion

The purpose of this article has not been to identify all research in librarianship which has used political theories, concepts or variables, but rather to illustrate some of the types of studies which have been undertaken. Clearly, the field could dedicate itself to a decade of studies focused on the political, and even so, such ground-laying research would only begin to identify, describe and evaluate political variables important to librarianship. Useful politically-based studies have been done, but they are few and do not lead to a "theoretical formulation which identifies the profession's position in a broader social context of all social [or informational] services and all professions."[66]

Simply, it is time to get on with the politically-based research in our field. There is much from the discipline of political science which can be used to shape our studies and we should borrow assiduously.

Because the stakes are so small in relation to other expenditures by states, because most legislation related to libraries is enabling rather than binding, and because use of libraries is voluntary rather than mandatory, librarians cannot expect political scientists to be highly concerned with libraries. Although as Monat states: "The mantle of 'civic ornament' is after all, infinitely preferable and strategically much more functional than the image of a 'necessary evil' or a public nuisance."[67] In this age of accountability, remaining a largely misunderstood and poorly explained civic ornament may not be sufficient to

guarantee the continuity of library institutions as librarians presently know them. As those to whom society has entrusted the maintenance and development of libraries, librarians must engage in research related to the role of the library within society. Most library-based studies involving political analysis have been exhortative or theoretical. Librarians must engage in more empirical research focused upon library-related variables in relation to political-process variables.

References

1. Easton, David. *A Framework for Political Analyses.* Englewood Cliffs, N.J.: Prentice-Hall, 1965, p. 21.

2. Garson, G. Davis. *Handbook of Political Science Methods.* Boston: Holbrook, 1971, p. 3.

3. Ibid., pp. 3-4.

4. Bachrach, Peter, and Baratz, Morton S. *Power and Poverty.* New York: Oxford University Press, 1970.

5. Prewitt, Kenneth, and Stone, Alan. *The Ruling Elites: Elite Theory, Power and American Democracy.* New York: Harper & Row, 1973. This work presents an interesting analysis of the elitist/pluralist controversy.

6. For a thorough discussion of measures of representation, see Pitkin, Hanna F., ed. *Representation.* New York: Atherton, 1969.

7. Jones, Charles O. *An Introduction to the Study of Public Policy.* Belmont, Calif.: Wadsworth, 1970, p. 1.

8. Ibid., p. 11.

9. Garson, *Handbook,* pp. 3-4.

10. Williams, Oliver. "Life Style Values and Political Decentralization in Metropolitan Areas." *Southwestern Social Science Quarterly* 48(Dec. 1967):299-310.

11. Parkin, Andrew. "Centralization and Urban Services: The Australian Experience." *Policy Studies Journal* 9(Summer 1981):1059-65.

12. For one of many examples see, Easton, *A Framework.*

13. Joeckel, Carleton Bruns. *The Government of the American Public Library.* Chicago: University of Chicago Press, 1935.

14. Gleason, Eliza Atkins. *The Southern Negro and the Public Library.* Chicago: University of Chicago Press, 1941.

15. Spencer, Gwaldys. *The Chicago Public Library: Origins and Backgrounds.* Chicago: University of Chicago Press, 1943.

16. Garceau, Oliver. *The Public Library and the Political Process.* New York: Columbia University Press, 1949.

17. Ibid., p. 239.

18. Pemberton, John E. *Politics and Public Libraries in England and Wales 1850-1970.* London: The Library Association, 1977.

19. Ibid., p. 1.

20. Moore, Everett LeRoy. "The Library in the Administrative and Organizational Structure of the American Public Community College." Ph.D. diss., University of Southern California, 1973; and Whitbeck, George W. *The Influence of Librarians in Liberal Arts Colleges in Selected Decision Making Areas.* Metuchen, N.J.: Scarecrow, 1972.

21. Beach, Fred F., et al. *The State and Publicly Supported Libraries: Structure and Control on the State Level.* Washington, D.C.: U.S. Office of Education, 1956.

22. Monypenny, Phillip. *The Library Functions of the States: Commentary on the Survey of Library Functions of the States.* Chicago: ALA, 1966.

23. Nelson Associates, Inc. *American State Libraries and State Library Agencies: An Overview with Recommendations* (ED 022 486). Washington, D.C.: National Advisory Commission on Libraries, 1967.

24. Shuman, Bruce A. "The State Library Agency and Administrative Placement in Government." *Public Library Quarterly* 1(Spring 1979):21-34.

25. Dürr, W.T. "Information and Power: Information as a Key in the Political Process." In *Information Politics* (Proceedings of the 39th Annual Meeting of the American Society for Information Science, San Francisco, Calif., 4-9 Oct. 1976), compiled by Susan K. Martin, p. 76 (abstract) and microfiche IV-D9 (339) (text of paper).

26. Ibid., p. 344.

27. Diener, Richard A.V. "An Information-Based Hypothesis for the Evaluation of Socio-Political Power." In *Information Politics,* p. 75 (abstract) and microfiche IV-C14(330) (text of paper).

28. Howard, Edward N. *Local Power and the Community Library* (The Public Library Reporter, No. 18). Chicago: ALA, 1978.

29. Schein, Virginia E. "Sex Role Stereotyping, Ability and Performance: Prior Research and New Directions." *Journal of Library Administration* 2(Spring 1981):87-94.

30. Ibid., p. 91.

31. Wilson, Pauline. *A Community Elite and the Public Library; The Uses of Information Leadership* (Contributions in Librarianship and Information Science, Number 18). Westport, Conn.: Greenwood Press, 1977.

32. Berelson, Bernard. *The Library's Public.* New York: Columbia University Press, 1949, p. 46.

33. Wilson, *A Community Elite,* p. 145.

34. Ibid.

35. Joeckel, *The Government of the American Public Library.*

36. Garceau, *The Public Library and the Political Process.*

37. Prentice, Ann E. *The Public Library Trustee, Image and Performance on Funding.* Metuchen, N.J.: Scarecrow, 1973.

38. Robbins, Jane. *Citizen Participation and Public Library Policy.* Metuchen, N.J.: Scarecrow, 1975.

39. White, Diane. "Public Library Boards: An Exploration of Their Viability in Library Governance." *Current Studies in Librarianship* 4(Spring/Fall 1980):43-52.

40. Prentice, *The Public Library Trustee,* p. 140.

41. Ibid., p. 143.

42. Robbins, *Citizen Participation and Public Library Policy,* p. 75.

43. White, "Public Library Boards," p. 51.

44. Pitkin, *Representation.*

45. Garrison, Guy G. *Seattle Voters and Their Public Library.* Springfield: Illinois State Library, 1961; and _____. "Voting on a Library Bond Issue: Two Elections in Akron, Ohio, 1961 and 1962." *Library Quarterly* 33(July 1963):229-41.

46. Lindahl, Ruth G., and Berner, William S. *Financing Public Library Expansion; Case Studies of Three Defeated Bond Issue Referendums.* Springfield: Illinois State Library, 1968.

47. Garrison, *Seattle Voters,* p. 77.

48. Ibid., p. 76.

49. Stanford, Edward B. *Library Extension Under the WPA; An Appraisal of an Experiment in Federal Aid.* Chicago: University of Chicago Press, 1944.

50. Nyquist, Ewald B. "Poverty, Prejudice and the Public Library." *Library Quarterly* 38(Jan. 1968):78-89.

51. Conant, Ralph W., ed. *The Public Library and the City* (Symposium on Library Functions in the Changing Metropolis, Dedham, Massachusetts, 1963). Cambridge, Mass.: MIT Press, 1965; Monat, William R., et al. *The Public Library and Its Community:*

A Study of the Impact of Library Services in Five Pennsylvania Cities. University Park: Pennsylvania State University, 1967; and Koepp, Donald W. *Public Library Government: Seven Case Studies.* Berkeley: University of California Press, 1968.

52. Wellisch, Jean B., et al. *The Public Library and Federal Policy* (Sponsored by the ystem Development Corporation). Westport, Conn.: Greenwood Press, 1974.

53. Shubert, Joseph F. "The Impact of the Federal Library Services and Construction Act." *Library Trends* 24(July 1975):27-44.

54. St. Angelo, Douglas, et al. *State Library Policy: Its Legislative and Environmental Contexts.* Chicago: ALA, 1971.

55. Ibid., p. 62.

56. Molz, Redmond Kathleen. *Federal Policy and Library Support.* Cambridge, Mass.: MIT Press, 1976.

57. Ibid., p. 24.

58. Ibid., p. 108.

59. Rodger, Eleanor Jo, and Zweizig, Douglas. *Output Measures for Public Libraries.* Chicago: ALA, 1982.

60. Levy, Frank S., et al. *Urban Outcomes: Schools, Streets, and Libraries.* Berkeley: University of California Press, 1974, p. 1.

61. Ibid.

62. Ibid., p. 22.

63. Shera, Jesse H. *The Foundations of Education for Librarianship.* New York: Becker and Hayes, 1972, pp. 398-401. (The first doctoral program was initiated at Chicago in 1926. During the 1950s six additional schools inaugurated doctoral programs—Illinois, Michigan, Columbia, Western Reserve, California-Berkeley, and Rutgers. The Oct. 1983 list of accredited library schools issued semiannually by the American Library Association identifies a total of twenty-five doctoral programs. One of these offers the Doctor of Arts, not the Ph.D. degree. Two schools cooperatively offer a joint program, one school is presently not admitting students and another actually awards its degree through another unit within the university.)

64. Kilpela, Raymond. "Library School Faculty Doctorates: A Statistical Review." *Journal of Education for Librarianship* 22(Spring 1982):239-59. (On p. 239, Kilpela states: "The over-all percentage of faculty members with doctorates increased from 32.1 percent in 1960 to 65.9 percent in 1978.")

65. Garceau, *The Public Library and the Political Process.* p. 239.

66. Beasley, Kenneth E. "Librarians' Continued Efforts to Understand and Adapt to Community Politics." *Library Trends* 24(Jan. 1976):572.

67. Monat, "The Role of the Social and Behavioral Sciences," p. 591.

This Page Intentionally Left Blank

Research and the Psychology of Information Use

SARA FINE

ONE OF THE SIGNIFICANT consequences of the revolutionary changes in information technology is the recognition, first of all, that information is composed of complex structures and, second, that human beings react to information in complex ways. The complexity of information and the organization of knowledge have become prime targets for theory building and research by information and library science researchers; the ways in which human beings interact with information is becoming an increasingly focused concern for psychologists. It is not surprising that a relationship has formed and is growing between technologists, library and information scientists and psychologists. The purpose of this article is to present a psychological perspective on research in librarianship and to explore the potential for application of psychological research principles and practices to behavioral research in librarianship, not in order to replace current research purposes, methods and techniques in librarianship, but to enrich them.

Behavioral Research in Librarianship: A Brief Overview

Behavioral studies in librarianship seem to cluster into four major areas of interest. First is the interest in organizational behavior and the application of principles from theories of management to the administration of libraries—studies that concern management styles and their various effects, organizational climate and job satisfaction, and organi-

Sara Fine is Associate Professor, University of Pittsburgh, Pittsburgh, Pennsylvania.

zational changes as it affects roles, functions and structures. Interest in the library as a social system has increased with the advent of technology, networks, and resource sharing, an interest that is evident both in the library research literature and in dissertation research.The reader is referred to Helen Howard's article on "Organization Theory and Its Application to Research in Librarianship" in this issue[1] and to Ethel Auster's article on "Organizational Behavior and Information Seeking"[2] for a comprehensive review of current thinking and research on the behavioral aspects of library organization and administration.

The second area for behavioral research in librarianship concerns the communication patterns of librarians, both verbal and nonverbal, as they affect the quality of library service, with particular emphasis on the interactive process of the reference interview. It is in the context of the reference interview that librarians have traditionally been most aware of the behavioral dimension of their work. An historical overview of the writings and research about the reference process, tracing the evolution of the concept of reference as an interpersonal process, can be found in Charles Bunge's[3] forthcoming review of the "Interpersonal Dimension of the Reference Interview," in Michael Roloff's review of research on "Communication at the User-System Interface,"[4] in Mary Jo Lynch's article on "Research in Library Reference/Information Service,"[5] and in reviews by Gene Norman,[6] Samuel Rothstein,[7] and Wayne Crouch.[8]

A third area reflects the interest that librarians have in understanding themselves as individuals in the context of their professional lives. A considerable body of literature exists on the personality of the librarian, starting with Alice Bryan's[9] 1952 *Public Library Inquiry* in which a psychological inventory of traits was used to construct a personality profile of the "typical" librarian. Other studies followed: Douglas[10] in 1957, Rainwater[11] in 1962, Morrison[12] in 1971, Lee and Hall[13] in 1973, and Fine[14] in 1979, among many others. One of the related themes in these studies is the personality of censorship, as in studies by Busha[15] and Salomon,[16] an interest that still is evidenced in one of the current research topics proposed in the U.S. Department of Education-sponsored *Library and Information Science Research Agenda for the 1980s.*[17] Two recent articles, one by Sandra Black[18] and a forthcoming article by John Agada,[19] review the range of studies on librarian personality. These two current reviews are particularly useful in their critical analyses of the limitations in theory and method of earlier personality studies.

Studies of attitude are a fourth group in the behavioral area. There are really two kinds of attitude studies. First are those that measure

positive and negative responses to issues and processes, sometimes comparing the "attitudes" of different groups to each other. These studies are conceptually and methodologically the weakest in the whole behavioral arena. Second are those studies in which there is an attempt to change attitudes or to understand what makes attitudes change. As will be discussed later in this article, only the second kind of attitude research can be considered to reflect the purpose for which behavioral research is conducted.

While there are isolated studies of some other behavioral aspects of the profession, these four categories make up the bulk of behavioral research in librarianship. It is significant and worthy of note that none of these research areas addresses the user. The omission of "user studies" from this grouping of behavioral research is intentional. User studies in librarianship are, with a few noteworthy exceptions, not about users. Douglas Zweizig pointed out that "compared to studies of use, studies of users have been relatively rare," and that "the unit of analysis" is generally "away from the patron himself, to the utilities or *uses* that interaction with the library has provided."[20] Studies of uses and users, as they are conducted today and in the past, give us virtually no understanding of how people interact with information and with libraries. It is on that premise, the need to understand the psychology of the information user, that this article is based.

Library Research: A Psychological Perspective

Perhaps the crucial factor that distinguishes psychological research lies in the nature of its intent. When library research concerns itself with behavioral issues, the ultimate goal is generally to provide more effective service; that is, to determine those behaviors that increase satisfaction, encourage use, enhance the environment or promote managerial decisions for the more economic distribution of resources. With few exceptions, research in librarianship has looked at behavior through an operations perspective, not from a behavioral perspective nor through the eyes of behavioral methodologies. The primary purpose has been to *observe* behavior, not to predict it or change it, and not to understand it.

Recently there has been a shift in the focus of behavioral research in libraries to a more intensive consumer perspective. The call for a more disciplined marketing approach is evidenced by the interest in the concept and methods of community analysis and by the development of the *A Planning Process for Public Libraries*,[21] designed to assess the state of the community and the activities of the library and to develop

responsive plans and programs. Two of the agenda items in the *Research Agenda for the 1980s*, "Techniques for Marketing Library and Information Services" and "Consumer Behavior Research Applied to Libraries," suggest that the momentum is building for the view that "the information seeking public (are) potential consumers who are to be drawn actively to the library through more attractive services and more extensive marketing strategies."[22] The pursuit of a marketing approach for libraries is long overdue. Market survey research has utility for planning and for day-to-day operation; it may be a crucial element in making libraries accessible and dynamic social institutions in the community.

Market research is psychological in many of its aspects. Its purpose is to observe, predict, and then change behavior. Missing is the need to *understand* behavior, and therein lies its critical limitation. In pursuing the market survey approach, library research reasons as follows: If we know who wants what, we will provide it; if we know who comes when, we can adjust our schedule; if we know who our major users are, we can focus our collection to suit; if we know what subgroups exist in the community, we can program accordingly; if we know how many are satisfied with what, then we know what to continue doing. The result is that libraries are conceived and designed like department stores, with much concern for the repeat business that comes from enough satisfied customers but with little concern for how the product is used. While this kind of research is vital in today's tough marketplace for libraries, we run the risk that it distract from fundamental and theoretical considerations and from what may be our essential and unique contribution to an information-driven society—the understanding of how human beings seek and process information.

At its core, librarianship is a behavioral art. In fact, its purpose for being is to enhance—and thereby to change—behaviors, attitudes, beliefs and values through information. Its goals are to increase awareness, nurture creativity, transfer information, preserve and transmit knowledge. In order to fulfill its mission, librarianship needs to be based on well-founded theoretical understandings about the nature of information, the nature and needs of human beings, the transfer process between people and information resources and the way people use information. As yet, librarianship has not dealt with its fundamental behavioral dimensions through a cumulative body of behavioral research.

In contrast, information technologists have become increasingly engaged in basic research that is psychological in many of its aspects.

Studies in cognition, learning and comprehension, memory, thinking and brain structure, decision-making, creativity, problem-solving, information processing—combined with the whole range of work on artificial intelligence—have linked information scientists with psychologists as they exchange accumulated knowledge and interchange methodologies. But the purpose for which information technologists study the human intellectual process is specific to their own professional endeavors, the design of technological systems, and it is this purpose that directs and drives their research efforts.

For librarians, the purpose is different—not the design of information systems, but the design of service and delivery systems, the creation of a climate where learning, becoming informed, and personal and social growth are most likely to take place. As it stands now, behavioral research in librarianship reflects and reports the way libraries are currently designed and operated, the way librarians currently interact with patrons, and the way the community currently uses—or doesn't use—libraries. It does not deal with the essence of library service, the way human beings process and use information. In its current state, behavioral research in librarianship is not leading toward the development of a theory of user behavior.

Evolving a Theory of User Behavior

The prevailing theory of information need and use is that human beings need information in order to reduce the ambiguity in their environment and that they use information to impose some structure on an unstructured "event world,"[23]—i.e., the particular universe in which an event triggers the awareness of a need for information to define and then solve a problem. One theoretical view is that the world we live in is an orderly place, and information is a means to describe a portion of that order. Another view is that the world around us is random, and that we use information to reduce our sense of disorder so that we can cope with the randomness. In either case, information is a tool, not an end.

Libraries, however, function as though information itself is the goal to be achieved. When librarians are asked, "Why do people come to libraries?" they will invariably answer, "To find the information they need or want," or for recreational reading or to socialize or to come in out of the cold. But the whole focus of library service would shift if the answer were that people come to libraries to reduce ambiguity, or to increase their ability to cope with a situation, or to make a decision, or to find something that will lessen their anxiety, or to move themselves

toward some wanted goal. In other words, people come to libraries to solve problems, even if the problems are loneliness or the cold outside, not to "find information."

Brenda Dervin described two kinds of information: that which is generated externally (for example, from the resources of the library), which she referred to as "information 1"; "information 2" is generated from the user's internal reality, the expectations for and intended use of those resources. In describing the research approach that would derive from these different perspectives on the same user behavior, Dervin wrote: "Past research has typically focused on information 1: How many books were circulated? How much use was made of nonfiction books? Who checked out what kinds of materials?" Notice that these kinds of questions are concerned with the operation of the library, not with the psychological processes of the user. Research generated from a behavioral perspective and conceptualized from the perspective of the user has a different quality and provides a different meaning. Dervin characterized this perspective as "information 2." The questions themselves come from the user's frame of reference:

> [not] How did the individual find the information? [but] How did the individual find the information useful? ...Did the user learn, come to understand, or find out something as a result of intersecting with a library activity? What library resources served as the impetus? What kind of sense did the user make? How did he make that sense?[24]

Libraries are really in the business of fulfilling a psychological need, presupposing that human beings have a "need" for information for social survival, to be productive, and for their personal growth. Just as educators need to understand how people learn and grow in order to create the learning environment for growth to take place, so do librarians need to understand the process by which people come to experience their need for information—how they acquire it, unconsciously process it, consciously manipulate it, and then make use of it—before they can create a psychologically-relevant information environment.

In order to evolve a theory of user behavior, there are three broad and basic questions that need to be addressed. First, what is information? What are its various sources in the life of an individual? How do human beings tap the internalized information that they already have? How is new information integrated with that which already exists within the individual? What library events trigger the assimilation of new information? And how can libraries contribute to the process of information transfer, a concept that implies more than the delivery of documents into the hands of the user.

The second broad question concerns the way in which people interact with information, and under what environmental and psychological circumstances. In traditional library research terms, the questions have a clear shape and intention: What kinds of information do users request most often? What library services are most used? What community subgroups like which activities? For what reasons do people say they come to libraries? The operational question is: How can we get the greatest number of resources in our particular library to the greatest number of people with the greatest efficiency?

While there have been many studies of library users, few give any more information than "how many did what." This kind of research is rarely of use outside of the institution in which it is done, and sometimes not even there. Even when research across a variety of libraries produces comparable results, its use is limited to a narrow band of issues for decision-making. Its focus is on the pragmatic, the specific. From a psychological perspective, research questions are concerned with the laws and principles of human behavior and are directed at the more universal aspects of information seeking: How is information acknowledged as information by the individual? How is it received and assimilated? How much information is too much, and for whom, and under what conditions? How does the unconscious processing of information take place? Is it immediate or does it require time and distance? How do the librarian's verbal and nonverbal cues shape the information and change the user's perceptions of it? How does the client's psychological state open up or inhibit the way information is received and processed? How does an individual come to experience the "felt need" for information? What impels him to the library? Is a "need" that which the individual states? What about the need that cannot be articulated—is it then not a need from the perspective of the library? These questions can be translated into a library context without losing their behavioral meaning. For example, in his introduction to *Knowledge and its Organization,* David Batty made some observations about the "condition of ignorance" that seeks information, and from his description of that "condition," some behavioral questions are implied. Why does the user exhibit an "inability to formulate a question at the level of precision where the answer will ultimately be found to lie?" And why is "the inquirer...impelled toward general (rather than specific) statements?" These questions do not fit the mold of traditional research in librarianship; they do suggest that the traditional methods and designs that permeate library research may not be sufficient for their study. However, there are methods and designs available from the behavioral sciences

that would make these questions both askable and testable. Batty continues:

> We structure knowledge in the light of existing patterns of enquiry, but we have no way of anticipating the structure of patterns in the future, or the connections between the disciplines that they will make necessary.[25]

The third question concerns the transmittal and transfer processes, the way in which information is packaged and communicated, and whether the way we are currently packaging information is truly relevant to the way people can receive and use it. Packaging includes many elements; not only the way information is organized and presented, but the way it is housed and the way it is presented. One of the aspects of packaging, the behavior of the librarian, the "transfer agent" or "intermediary," has received considerable attention in the library literature, more in a prescriptive and didactic mode than through research. Research has generally concerned the counseling or interpersonal aspect of the reference interview as, for example, Helen Gothberg's[26] application of the "immediacy" concept from psychological counseling to the reference interview, or on nonverbal factors in communications, as in Edward Kazlauskas's[27] kinesic analysis of the various "service points" in an academic library, or on issues of "approachability" as in a study by Swope and Katzer.[28] A number of models of the reference interview have been developed in an attempt to clarify the interpersonal negotiation between librarian and client; Karen Markey,[29] Brian Nielson,[30] Robert Merikangas,[31] Marilyn White,[32] and Sara Fine,[33] among others, have developed explanatory approaches to the complex interaction between information seeker and information provider. But as yet, the profession has not addressed the concept that librarian behavior, to be effective, consists of more than interpersonal skills and reference skills. It must also manifest an understanding of the ways in which people—with their variety of cognitive modes, psychological states, and sources from which they receive informational input—proceed in their attempts to fulfill needs and solve problems.

The Nature of Psychological Research

Psychological research attempts to formulate, through systematic observation and experimentation, the laws and principles that underlie some aspect of human behavior and to make the knowledge of those laws and principles available for use in the conduct of human affairs. In

a particular research instance, the goal may be to: (1) observe and describe some behavior, (2) explain a particular behavior in terms of its antecedents or correlates, and/or (3) predict the circumstances under which the behavior is likely to occur again.

Another approach to psychological research does not begin with the identification of a behavior for study, but with a psychological state, like anger or depression, or a phenomenon of the human experience, like locus of control or resistance to change or information processing. The intent, then, is to: (1) describe the phenomenon, (2) discover its elements and their interaction, and (3) explain its existence on the basis of existing psychological theory.

The primary factor that determines a research study as psychological is in the nature of the question. A study that asks "who?" or "what?"—who uses libraries? or what materials do they use?—is not psychological research, except in its most elementary state of observing and describing behavior. Behavioral research asks "why?" or "how?"—why do human beings need information? or how do human beings process it? When the question "Why do people use libraries?" is proposed from a psychological perspective, its theoretical constructs would concern the need for information by all human beings and the processes by which they acquire it. The methodology would go beyond a questionnaire that asks respondents to choose one option from a list of items, a list that was generated from the perspective of the library rather than from the perspective of the user. Library research has typically limited itself to a narrow range of methods for the collection of data, and those methods generally reflect the library as it exists. In general, asking people what they want is not the answer; people are limited in their ability to respond by their own potential for imagination and by their preconceptions about and experiences with the library. Research instruments generally give respondents only those options which are already available or which are already considered to be future options. In the context of a structured questionnaire, laced with the existing notions of the library's functions and services, the respondent's only choice is to fit underlying and unfulfilled needs into the existing structure of systems and services.

Another limitation to this method as a way to collect data about human behavior is that respondents generally do not react at the time when they are experiencing the need or resolving the associated problem. The experience of completing the questionnaire is removed from the immediacy of the experience at issue; and in the interim, perceptions change. Psychological research tries to tap the response at the time it is

being experienced, a difficult approach to take in the context of traditional library research methods but one that is integral to psychological research.

Another characteristic of psychological research lies in the variety of its methods and the richness that results from combining various methods. Observation, case study, survey and interview techniques have found many uses in a variety of studies in librarianship. The most typical design in library research to study behavioral issues the ex post facto design, where data are collected through survey or interview techniques and analysis is conducted on the dependent and independent variables. It must be noted that survey research that seeks only descriptive data and does not presume to seek relationship between variables is not ex post facto research, nor is it behavioral research; it is survey research. There is no doubt that well designed and rigorously controlled ex post facto research, using appropriate instrumentation for measurement, supported by previous research findings, can add significantly to our body of knowledge about social behavior. Most of the important behavioral or sociological studies in librarianship have used this approach. In fact, what ex post facto research is to sociology, experimental research may be to psychology.

One of the primary methods for psychological study is experimentation, a design that has been adapted for research in other information-related professions but rarely applied to studies in librarianship. The result is that library research generally studies what *is*, not what might be, given other conditions or after some "treatment" has been applied. The lack of experimental research suggests stagnation of knowledge about the behavioral aspect of the profession. While there are obvious problems and limitations to the use of experimental design in any social setting, where neither the subjects nor the variables can be controlled as they are in a laboratory, it is still the method that makes it possible to demonstrate a connection between the two variables, even when one cannot conclude causation. With its problems and limitations, it is still a primary method by which new knowledge about human behavior is generated.

The proposal that library researchers adopt an experimental mode into their repertoire of methodologies for the study of behavior in libraries is not a new one. Michael Brittain[34] has pointed out that user studies have run into a number of seemingly intractable problems, one of which is that the mainstay research methods in librarianship have gone largely unchanged over the years, even though the objectives of

user studies have changed appreciably. In writing for *Library Trends* in 1964, Leon Carnovsky,[35] who for several years compiled studies done in library schools for *Library Quarterly,* noted that successful research in librarianship is dependent on the application of the methods and techniques found useful in other disciplines. In that same issue, David Krathwohl[36] carefully explicated the relationship between the problem-solving behavior that characterizes much of our everyday activity and the development of an experimental design for library research. George McMurdo[37] has called for "truly interdisciplinary studies between librarianship and psychology" which could draw on "the method of the experimental psychologist." McMurdo described an experimental method for the study of a question that has often been the subject of more traditional library research, that is, the effect of the librarian's appearance of "busyness" on approach activity by patrons. McMurdo used the example to demonstrate the applicability of the experimental research method within the context of library operations. In his 1972 study of the effect of prime location on the circulation of a select group of titles, Herbert Goldhor[38] used "an approximation of the classical four-cell experimental design." But few actual experimental studies are reported in the literature of librarianship, other than the few that appear in the dissertation literature.

A review of behavior-related dissertation research in librarianship revealed that most designs for data collection are based on the fielding of questionaires, personal interviews and/or the analysis of documents. There are, however, a small number of experimental studies in dissertation research, primarily using library school students as subjects. Elaine Jennerich[39] used actors in simulated situations to test the effect of "microcounseling" training,[40] where the skills of counseling are broken down into discrete components to be mastered by specific training and practice, on the ability of experimental subjects to apply counseling principles in a real situation. The method had two advantages: subjects were presented with live people in immediate situations which allowed for greater authenticity in the test situation; second, by using actors, the consistency of the experimental stimulus was controlled. Jennerich used "expert judges" to evaluate the responses of the subjects to the test situation. Adelaide Sukiennik[41] tested the effect of assertiveness training on library school women students to raise their level of consciousness and to teach appropriate behavioral skills, using pre- and post-test instruments that presented "incidents" to which subjects self-reported their personal response styles. Veerle Minner Van Neygen's[42] study of

resistance to psychology by library school students was also experimental in method, testing whether a specifically designed training sequence would increase comfort with behavioral approaches to librarianship. It is important to note that in each of these studies, it was the effect of the treatment that was the object of study, not the students. What these studies revealed concerned the effectiveness of the various experimental events in changing behaviors.

While experiments related to libraries are relatively uncommon in the research of librarianship, there are experimental studies reported in the psychology literature where the library was the laboratory and library users the subjects. The library, for example, has been a laboratory for studies of "territoriality" that sought to understand how people viewed the work spaces that they had staked out and how far they would go in defending them against intruders. In a 1976 experimental study, a group of psychologists[43] tried to determine the effect of being touched on subjects' perceptions of the effectiveness of service and their feelings about the environment. The results suggested that subjects who were touched by a clerk while checking out books, particularly female subjects, whether or not they were consciously aware that they had been touched during the exchange, were more positive in their evaluation of the clerk and of the library environment than were those who were not touched. The experiment was conducted at the Purdue University library.

Along with experiments using training as the treatment, there are other examples of designs and methods that have been adapted from psychological research and applied to libraries. Raymond Pyles's study[44] of the relationship between decision-makers' behavior and the contents of computer-based information systems used an experimental design with simulated planning tasks representing wartime and peacetime environments to test the effect of contradictory information on performance. In a study that used observation of subjects' behavior in their natural setting, Richard Crouch[45] collected data from five "impartial observers" to assess the communication styles of twenty-five randomly selected librarians in the conduct of a reference interview.

The use of projective techniques, where the subject is given an ambiguous stimulus such as a set of thematic pictures or emotion-loaded words onto which he may "project" a characteristic mode of responding has been adapted by several studies of behavior in library research.

Sara Wheeler[46] used a Thematic Apperception Test—i.e. photographs of library situations—to reveal covert emotional reactions to

some basic professional functions by children's librarians, discovering that some of them had a real distaste for storytelling. The use of a projective technique was preferred over a self-report inventory because librarians are unlikely to present responses that are unacceptable to the norms of the profession when asked direct questions.

In her studies of resistance to technology by librarians, library school students and faculty, Sara Fine[47] used several modified projective techniques in some of her instruments: the measurement of thematic responses to cartoons was one of the devices; another was an adjective checklist to measure affective reactions to technology. The inclusion of these measurement devices was based on the premise that resistance is an unconscious dynamic and that, therefore, the appropriate measurement was a projective technique.

A study of librarian burnout by Roose, Haack and Jones[48] used an unusual adaptation of the projective technique. Subjects were asked to draw pictures depicting what burnout is like. The pictures were representative of the way individuals saw themselves in debilitating situations at work, and from their variety, it was evident that the stages of burnout could be identified. One of the useful results, in behavioral terms, was the graphic description of the kinds of pressure situations that are associated with public reference service and the nature of the emotional reactions they induce. The drawings were interpreted and classified according to a psychological construct of the burnout syndrome. The study not only provides a statistical description, but enhances our understanding of burnout as a unique experience for librarians. In this study, the head of reference in a major library system, a psychiatric nurse, and a clinical psychologist pooled their interests, experiences and methodologies.

Among the projects developed for *A Library and Information Science Research Agenda for the 1980s,*[49] one proposal calls for an experimental design. The idea was generated by an experiment that had been conducted by a research group at the Massachusetts Institute of Technology which sought to study how a group of teenage boys would interact with a "knowledgable information system." The boys were presented with a typewriter console and told that they could ask any questions they liked. The "information system" was really a group of top-grade physicists and engineers in the next room who heard the questions and then tried to respond interactively with the questioners through the typewriter console. By observing the process, the information system designers hoped to learn how people go about asking questions and what we might have to do to answer them.

The current *Research Agenda* proposal would review and revise the experimental design, taking into account new capabilities and more sophisticated technologies, and then use the method to study how young people seek information. However, there is a whole range of additional behavioral questions that could be addressed by the use of this design: What kinds of stimuli trigger what kinds of questions; how subjects interact with the information as they receive it, and what kinds of followup questions they ask; what stimulates different behavior in different individuals during the process; and how group interaction affects question-asking behavior. From a psychological perspective the study would be designed to understand the processes involved as well as to assess the observable behavior.

Psychological research is further predicated on a theoretical explanation and description of the phenomenon being studied. It is the development of a construct about the phenomenon that constitutes the basic task in the design of a psychological study. The phenomenon dictates the methodology; the methodology does not dictate the phenomenon. Sometimes exploratory research is undertaken for the purpose of learning about the phenomenon, to understand more, for example, about learning or creativity or information processing, in order to understand its components and to propose hypotheses for how they interact with each other. A study that is purely exploratory is sometimes undertaken in order to formulate hypotheses which may then become the bases for subsequent studies.

The failure to build research on clearly and fully developed constructs is a major limitation in the way behavior research is conducted in librarianship. There are numerous studies, for example, of attitudes—attitudes toward library services, tools and procedures. But many studies treat "attitude" simplistically, as though it is simply a like-dislike response, when actually attitudes are made up of a complex of affective, cognitive and behavioral factors. In order to understand and assess an attitude, all of these factors must become part of the construct, and the data collection instrument must be designed to match the elements of that construct.

The same is true of other phenomena that are popular and important areas of study in librarianship: "satisfaction," for example, or "participatory" (as in management), or such subjective concepts as "interest," "commitment," or "self-image." Although we use these words in communicating about abstractions, we cannot use them in psychological research without a careful delineation of their meaning and of the elements contained in them. While the like-dislike approach

may produce important practical information for the operation of the library, it does not increase our understanding of how people behave and how libraries respond.

One example of a phenomenon that longs to be studied in relation to libraries is creativity. While we may point with pride to creative people who have had close contact with libraries, what do we really know, as librarians, about the creative process? The theory of creativity holds that the creative process and the products of the creative person are generated in interaction with the environment.[50] What do we know of the way the library environment interacts with the individual to allow for the full expression of creativity to emerge?

There have been some studies of the relationship between creativity and information-seeking behaviors reported in the library literature, but for the most part it is research about libraries, not about creativity. For example, Robert Maizell[51] found that the more creative subjects in his study used a wider variety of information channels than did their less creative colleagues. He also found that creative chemists preferred to search for themselves rather than make use of available reference services. While such studies provide useful information on user behavior, style and preference they do not help us to understand the relationship between creativity and the information environment. "It is deceptively easy to describe information use, and many researchers have taken the easy road," wrote Geoffrey Ford in his survey of user behavior research. "It requires an effort of will to ponder on the work that has gone before, to synthesize a body of theory, and having theorized, to formulate a hypothesis, to test it, and to refine the theory in the light of new findings." Ford concluded that: "Perhaps the most important finding (in his review of research on user behavior) is that it has yet to be demonstrated that the use of libraries has any definite influence on anything else."[52] Perhaps it is time to demonstrate that the library environment has the potential to greatly influence learning and informing behaviors, that as Cochrane and Pawlowski[53] have suggested in their essay on creativity, the library can "serve as a continuum through which...exploration may take place and further insights be gained."

There are natural laboratories in librarianship that lend themselves to the study of various phenomena, but they are often overlooked and unexploited for research purposes. The study of "leadership" or "management ability" is a case in point. This subject, which has received considerable attention in the social sciences literature, seems to be of considerable interest for doctoral research in librarianship. Most dissertation studies involving leadership use a mail survey method; a favorite

technique is a mail survey of either ARL directors or directors of large public libraries. There are, however, alternative ways to study leadership behavior. The Seattle Career Development and Assessment Center project[54] was set up to assess the management skills and potential of participants in the project, thus providing a situational opportunity for intensive research. The nature of the project could have provided researchers with a population to study, the possibility of an experimental design, even the potential for a longitudinal study. The focus of the evaluation research that was produced from the project looked at attitudes and outcomes, an appropriate design for evaluation of a project, but the opportunity was lost for study of a behavioral factor that is an essential part of our professional enterprise.

In another such natural laboratory, the Council on Library Resources' Senior Fellows Program at the University of California, Los Angeles,[55] a small group of academic and research library managers participate in a six week summer institute in advanced management and research techniques. The project staff is conducting a series of behavioral studies, developing professional profiles of participating fellows and comparing them with a control group of academic librarians in order to identify characteristics and career patterns of academic library leaders. The current research is descriptive and comparative, but the intent is to develop hypotheses for further research on leadership in librarianship. Library researchers tend to think of a "sample population" to study. The concept of "laboratory" for the study of human behavior, adapted from psychological research tradition, can enlarge and enrich the ways in which librarianship studies its own behavioral questions.

Another distinguishing characteristic of psychological research lies in the way the results of a study are interpreted and the implications derived from them. For example, if the results show that more women use libraries than men, the implications in terms of library operations might be that we need to provide more materials that appeal to women, or we need to find ways to appeal to the male population. For a psychological perspective, the further questions might be: Why do women use libraries more than men? or How do women differ from men in their information-seeking and processing behaviors.

The psychological perspective also differs sometimes in its view of "statistical significance." Library research deals with communities of users and communities of professionals, and research is considered rigorous and credible when the sampling design reflects representativeness and results in generalizability. The same is true for much of the

research in psychology. But in dealing with human beings, it is sometimes the anomaly that gives us information and insight. It is sometimes the abnormal that teaches us about the normal. An analogy from medical research might suggest that if one were studying the behavior of cells and all but one cell behaved normally, we would ignore that one as "not significant." Yet that one cell might give the crucial clue we seek. In matters of human behavior as well, deviation is sometimes as significant for study as generality.

The undertaking of psychological research demands acceptance of one other of its characteristics—the inherent ambiguity and nonconclusiveness of results. While experimental research must be designed and presented so that the methods are understandable and the experiment replicable, it is common experience in psychological research to find discrepant results from replicated studies. There are obvious possible reasons: the variables may not have been controlled for, or the subject population may have differed in unaccountable ways. External forces and internal events operate to change behaviors; even the passage of time with its concomitant changes in life experience can be a factor. Sometimes it is a random human factor that defies our understanding and our need for statistical consistency. But psychological literature still continues to grow, and with it some theories have evolved that contribute to our understanding and to the way we conduct and manage many of our social organizations. Psychological research is often inconclusive, replication is difficult, and results are sometimes contradictory. But the study of human behavior is like putting together a jigsaw puzzle. When the pieces do fit, a picture is forthcoming.

It sometimes seems that psychological research is intended to prove the obvious, to verify our common beliefs and our common sense. In fact, surprises are not unusual, and the obvious does not always match the results arrived at through systematic investigation. But on the other hand, we often do find that our experience and intuition and our observations of human behavior have indeed been validated through research. David Legge[56] has suggested that the bulk of psychological research *should* be aimed at demonstration of what we already know, at least as a starting point, and only then are we able to go a step further. It is the mark of a professional—and of a profession—that behavior not be based primarily on intuition, that intuition be an enhancement of our professional understanding and skill, not its basis. A professional does not behave randomly. And yet, in terms of understanding human behavior, libraries are random places, sometimes hitting it right, sometimes not. It is not enough to know *that* people behave as they do, we also need

to understand *why* and *how* if we are to attempt to solve problems whose origins are in human behavior.

In the past, the major issue that confronted librarians was how to get more material to more people more satisfactorily. But as information becomes more complex, more available and more crucial, it is also becoming apparent that people react to information in ways that are more complicated than just "getting it" or "having it" or "using it." Librarianship has moved into the behavioral arena, ready or not.

And so must its research evolve toward more psychologically relevant and more accurately conceptualized studies, more varied and creative research designs, and a sharper, clearer focus on the user. Perhaps library researchers cannot be expected to restructure their approaches without turning outward and, as information scientists have done, joining the other professions that have teamed up with psychologists to enhance their own understanding of their own profession in new and vigorous ways.

References

1. See Helen Howard's article, "Organization Theory and Its Applications to Research in Librarianship" in this issue of *Library Trends*.

2. Auster, Ethel. "Organizational Behavior and Information Seeking: Lessons for Librarians." *Special Libraries* 73(July 1982):173-82.

3. Bunge, Charles A. "Interpersonal Dimensions of the Reference Interview: A Historical Review of the Literature." *Drexel Library Quarterly* 20(Spring 1984) (in press).

4. Roloff, Michael E. "Communication at the User-System Interface: A Review of Research." *Library Research* 1(Spring 1979):1-18.

5. Lynch, Mary Jo. "Research in Library Reference/Information Service." *Library Trends* 31(Winter 1983):401-20.

6. Norman, O. Gene. "The Reference Interview: An Annotated Bibliography." *Reference Services Review* 7(Jan./March 1979):71-77.

7. Rothstein, Samuel. "Across the Desk: A Hundred Years of Reference Encounters." In *The Reference Interview* (Proceedings of the CACUL Symposium on the Reference Interview, held at the annual conference of the Canadian Library Association, Montreal, P.Q., 9-15 June 1977), pp. 27-53. Ottawa: Canadian Library Association 1979. Also in: _____. "CACUL Reference Interview; Across the Desk: 100 Years of Reference Encounters." *Canadian Library Journal* 34(Oct. 1977):391-99.

8. Crouch, Wayne W. *The Information Interview: A Comprehensive Bibliography and an Analysis of the Literature.* Syracuse, N.Y.: ERIC Clearinghouse on Information Resources, 1979.

9. Bryan, Alice I. *The Public Librarian: A Report of the Public Library Inquiry.* New York: Columbia University Press, 1952.

10. Douglass, Robert Raymond. "The Personality of the Librarian." Ph.D. diss., University of Chicago, 1957.

11. Rainwater, N.G. "A Study of Personality Traits of 94 School Students as Shown by the Edwards Personal Preference Schedule." Master's thesis, University of Texas, 1962.

12. Morrison, Perry D. *Career of the Academic Librarian: A Study of the Social Origins, Educational Attainments, Vocational Experience and Personality Characteristics of a Group of American Academic Librarians.* Chicago: ALA, 1969.

13. Lee, David L., and Hall, Janet E. "Female Library Science Students and the Occupational Stereotype: Fact or Fiction?" *College & Research Libraries* 34(Sept. 1973):265-67.

14. Fine, Sara. *Resistance to Technological Innovation in Libraries* (Final Report. Parts I, II and III). Washington, D.C.: HEW, Office of Education and the Office of Libraries and Learning Resources, 1979.

15. Busha, Charles H. "Student Attitudes Towards Censorship and Authoritarianism." *Journal of Education for Librarianship* 11(Fall 1970):118-36.

16. Salomon, Kristine, and Burgess, Curt. "Social, Psychological and Demographic Characteristics of Adults with a Disposition toward Library Censorship" (In "Star-Studded Ideas for Librarians: Second Annual Poster Session Abstracts," edited by Ruth J. Person). Chicago: ALA, 1983 (pamphlet, unpaged).

17. Cuadra Associates. *A Library and Information Science Research Agenda for the 1980s: Summary Report* (Dept. of Education, Office of Libraries and Learning Technologies, Project No. 300-81-0022). Santa Monica, Calif.: Cuadra Associates, Inc. 1982.

18. Black, Sandra M. "Personality—Librarians as Communicators." *Canadian Library Journal* 38(April 1981):65-71.

19. Agada, John. "Studies of the Personality of Librarians." *Drexel Library Quarterly* 20(Spring 1984) (in press).

20. Zweizig, Douglas L. "Measuring Library Use." *Drexel Library Quarterly* 13(July 1977):7, 13.

21. Palmour, Vernon E., et al. *A Planning Process for Public Libraries.* Chicago: ALA, 1980.

22. Cuadra Associates. *A Library and Information Science Research Agenda for the 1980s.*

23. Debons, Anthony. "Command and Control: Technology and Social Impact." In *Advances in Computers,* vol. 11, edited by Marshall Yovitz, p. 326. New York: Academic Press, 1971.

24. Dervin, Brenda. "Useful Theory for Librarianship: Communication, Not Information." *Drexel Library Quarterly* 13(July 1977):24.

25. Batty, David. *Knowledge and Its Organization.* College Park: University of Maryland, 1976, p. iv.

26. Gothberg, Helen. "Immediacy: A Study of Communication Effect on the Reference Process." *Journal of Academic Librarianship* 2(July 1976):126-29.

27. Kazlauskas, Edward. "An Exploratory Study: A Kinesic Analysis of Academic Library Public Service Points." *Journal of Academic Librarianship* 2(July 1976):130-34.

28. Swope, Mary J., and Katzer, Jeffrey. "The Silent Majority: Why Don't They Ask Questions?" *RQ* 12(Winter 1972):162-66.

29. Markey, Karen. "Levels of Question Formulation in Negotiation of Information Need During the Online Presearch Interview: A Proposed Model." *Information Processing and Management* 17(no. 5, 1981):215-25.

30. Nielsen, Brian. "Teachers or Intermediary: Alternative Professional Models in an Information Age." *College & Research Libraries* 43(May 1982):183-91.

31. Merikangas, Robert J. "Librarians and Client: Who's in Charge?" In *Options for the 80's: Proceedings of the Second National Conference of the Association of College and Research Libraries,* edited by Michael D. Kathman and Virgil Massman, pp. 375-84. Greenwich, Conn.: JAI Press, 1982.

32. White, Marilyn D. "The Reference Encounter Model." *Drexel Library Quarterly* 19(Spring 1983):38-55.

33. Fine, Sara. "The Librarian as Youth Counselor." *Drexel Library Quarterly* 14(Jan. 1978):29-44.

34. Brittain, J. Michael. "Pitfalls of User Research and Some Neglected Areas." *Social Science Information Studies* 2(July 1982):139-48.

35. Carnovsky, Leon. "Publishing the Results of Research in Librarianship." *Library Trends* 13(July 1964):126-40.

36. Krathwohl, David R. "Experimental Design in Educational Research." *Library Trends* 13(July 1964):54-67.

37. McMurdo, George. "Psychology and Librarianship—An Appraisal of the Potential of Experimental Psychology in the Study of Librarian—Client Behavior." *ASLIB Proceedings* 32(July/Aug. 1980):319.

38. Goldhor, Herbert. *The Effect of Prime Display Location on Public Library Circulation of Selected Adult Titles* (ED 060 868). Washington, D.C.: U.S. HEW, Office of Education, 1972.

39. Jennerich, Elaine Z. "Microcounseling in Library Education." Ph.D. diss., University of Pittsburgh, 1974.

40. Ivey, Allen. *Microcounseling: Innovations in Interviewing Training.* Springfield, Ill.: Charles C. Thomas, 1971.

41. Sukiennik, Adelaide Reno Weir. "Training Women Library School Students for Greater Career Achievement." Ph.D. diss., University of Pittsburgh, 1978.

42. Minner, Van Neygen Veerle. "Students' Attitudes towards the Behavioral Approach to Library and Information Sciences: An Experiment Involving the Group as an Agent of Change." Ph.D. diss., University of Pittsburgh, 1981.

43. Fisher, Jeffrey D., et al. "Hands Touching Hands: Affective and Evaluative Effects of an Interpersonal Touch." *Sociometry* 39(1976):416-21.

44. Pyles, Raymond A. "Using Computer Based Information: How Information System Types Affect Decision Makers' Uncertainties." Ph.D. diss., University of Southern California, 1981.

45. Crouch, Richard Keith C. "Interpersonal Communication in the Reference Interview." Ph.D. diss., University of Toronto, 1981.

46. Wheeler, Sara H. "Children's Librarians in the Northwest." In *Libraries and Librarians of the Pacific Northwest,* edited by Morton Kroll. Seattle: University of Washington, 1960.

47. Fine, Sara. *Library Education and Resistance to Technology* (Final Report). Washington, D.C.: HEW, Office of Education, and Office of Libraries and Learning Resources, 1981.

48. Roose, Tina, et al. "Occupational Burnout Among Librarians." *Drexel Library Quarterly* 20(Spring 1984) (in press).

49. Cuadra Associates. *A Library and Information Science Research Agenda for the 1980s: Summary Report.*

50. Sinnott, Edmund W. "The Creativeness of Life." In *Creativity and Its Cultivation,* edited by Harold H. Anderson, pp. 12-30. New York: Harper, 1959.

51. Maizell, Robert E. "Information Gathering Patterns and Creativity." *American Documentation* 11(Jan. 1960):9-17.

52. Ford, Geoffrey. "Progress in Documentation: Research in User Behavior in University Libraries." *Journal of Documentation* 29(March 1973):86.

53. Cochrane, Mary Jane, and Pawlowsky, Mary D. "The Environment of Creativity." In *Knowledge and Its Organization,* edited by David Batty, p. 91. College Park: University of Maryland, 1976.

54. Melber, Barbara D., and McLaughlin, Steven D. *Evaluation of the Career Development and Assessment Center for Librarians.* Seattle: Battelle Human Affairs Research Centers, 1983.

55. Anderson, Dorothy. Project coordinator, Senior Fellows Program, Council on Library Resources, University of California, Los Angeles.

56. Legge, David. *An Introduction to Psychological Science.* London: Methuen, 1975, p. 15.

Sociology and Library Research

LEIGH ESTABROOK

TO ANYONE FAMILIAR with them both, the relevance of sociological theory and methodology to research in librarianship may seem self-evident. For example, community analysis and user studies examine social and demographic factors that are assumed to affect attitudes toward and use of libraries; the seemingly endless debate about the extent to which librarianship is a profession is based on the belief that one can examine an occupational group as a social unit; and in library research about scholarly communication, there is a belief that something called the "scholarly community" exists and can be analyzed.

Relevance of one field to another does not imply that that relationship has been adequately developed, however. There are in fact several reasons why one might suspect work in sociology to have little impact on work in librarianship: (1) problems besetting any interdisciplinary research; (2) the difficulties in interpreting the relevance of sociological research for library practice; and (3) the differences between research in a subject discipline and that in a professional field.

To apply sociological theory and methodology to librarianship requires that one be a competent interdisciplinary scholar. Librarianship as a field has its own research and literature, and it is itself interdisciplinary (a fact to which this issue of *Library Trends* attests). Sociology is also interdisciplinary, even if one excludes areas such as "applied sociology." The political sociologists overlap with the economists and political scientists, the ethnographers look like anthropolo-

Leigh Estabrook is Associate Professor, School of Information Studies, Syracuse University, Syracuse, New York.

gists, and those who work with small groups draw directly on work by the psychologists. The problem is more than whether or not it is still possible to be the renaissance scholar. Territorial divisions within universities and within the publishing community also make it difficult to cross disciplinary boundaries. At the present time, few library school faculty hold the doctorate outside their field. In Kilpela's[1] review of 454 library school faculty with doctorates in 1978, 64.1 percent held the Ph.D. in library science or the Doctor of Library Science (D.L.S.). Only twenty-three (5.1 percent) were identified as holding the Ph.D. in any one of the social sciences. Formal training in an area may not be necessary for competence in a discipline; but it provides the critical introduction to theory and research. Moreover, the formal credential in a field is one of the first requirements for entry into a particular scholarly community.

A related problem is the likelihood that the sociological material used by library researchers may not reflect the most recent advances in sociological thought. The challenges of interdisciplinary research make it difficult for scholars to create informal connections with all others who may be working currently on the same problems. If, for example, a faculty member is involved in the American Library Association and the American Society for Information Science or the Special Library Association—activities that are promoted within the library school community—it is difficult also to maintain a level of involvement with the American Sociological Association and the Society for the Study of Social Problems or other sociological associations. Not to have those informal collegial relationships means that a scholar working on sociological research and its applications to library research must depend primarily on written reports of the sociological work. By the time these appear, the work may be several years out of date; and, moreover, the library research that cites the sociological research may also be several years old by the time it appears in print. This compounded time-lag leads to a situation in which it is likely that much of the sociological research that is brought to the library community's attention will not reflect the current debates within sociology.

A second barrier to applying sociological findings to library research is the problem of interpreting the meaning of those findings. Blalock[2] discusses the complexity of social research relative to the large number of interrelated variables which the researcher must consider. It is often difficult to ascertain what are causes and what the effects of different social factors. More significantly for the library practitioner, sociological research findings do not lead naturally to a conclusion

about the social policies that should be implemented. For example, research has consistently shown that less than 30 percent of a community's members are likely to be users of public libraries. The factors to which this is attributed include educational level of nonusers, location of branches, and the middle-class orientation of most public libraries. From this information, practitioners seeking to increase library use could infer a number of different strategies, including raising the educational level of the general population, relocating branches, or changing the types of services that are provided in the public library. Idealogical and practical considerations are more likely to determine which changes might be implemented than any sociological findings about library users.

Finally, there are the differences between research in a subject discipline and that in a professional field, which may limit the application of one to another. Allen[3] found little direct application of scientific research by the engineers in a research and development laboratory.

> It is becoming generally accepted that technology builds upon itself and advances quite independently of any link with the scientific frontier, and often without any necessity for an understanding of the basic science which underlies it.[4]

Schön,[5] in his recent analysis of the ways in which professionals "think in action" concludes that "the practice context is different from the research context in several important ways, all of which have to do with the relationship between changing things and understanding them."[6] From this he concludes "there is a disturbing tendency for research and practice to follow divergent paths. Practitioners and researchers tend increasingly to live in different worlds, pursue different enterprises, and have little to say to one another."[7]

This analysis suggests that it is not only difficult for librarians to be sociologists, too; but also that sociological findings may be difficult to apply and finally may be seen by librarians as irrelevant. If we return then to the question of how sociological research has affected research in librarianship we may expect to find the answer to be, "not much." This answer tells us nothing, however, about the nature of the relationship that does exist.

Sociology as a discipline has both a set of methodologies commonly applied in its research and a body of theories built upon those research findings. The contributions of the two can be looked at in somewhat different ways. First, the research methodologies commonly employed within librarianship can be analyzed to determine the extent

to which sociological methods are applied. Second, the research reported within the library field can be examined to identify the ways in which sociological research findings and theories are important to library research.

Library Science Research Methodology

The contribution of sociological methodology to library research is the easier of the two topics to analyze. Several recent studies of library research methodology have been conducted and two recent textbooks of methods of library research have been published. A reading of these suggests the importance of making the distinction between research design, data collection techniques, and data analysis in discussing sociological research and library research. At the present time, library research seems to incorporate some of the sociological approaches toward research design and data collection, but only a limited spectrum of the data analytic techniques.

At the 1978 Association of College and Research Libraries conference Kim and Kim presented an analysis of twenty years of articles in *College & Research Libraries*. They found that even in the second decade of publication (when *CRL* articles were more quantitative than those in the first), less than half (43 percent) of the articles could be classified as quantitative studies. In both periods, "survey research was the principle research methodology employed...[and] questionnaires [were] the primary data collection method...."[8]

Coughlin and Snelson, in an examination of two sets of Association of College and Research Libraries conference papers found that only 33.3 percent of the 1978 papers and 31.5 percent of the 1981 papers could be categorized as "research reports." "In 86% of the papers, data were collected from a realistic environment, that is, the author did not attempt to set up experiments or otherwise control the environment."[9] Even those papers that are based on research use limited methodologies. "Questionnaires and observations accounted for 70 percent of the data collected."[10]

Similar patterns were identified by Peritz in a study of methodologies of library research. Of all the library research studies analyzed, one-third were "surveys or experiments in libraries" and only 6 percent were "surveys on the public."[11]

These studies indicate that the design of library research employs experimental or quasi-experimental techniques only infrequently. The major sociological data collection method—survey research—is, how-

ever, used in many studies of libraries that employ systematic research. Use of observational techniques is also common to both library and sociological research.

The aspect of sociological methodology that is least likely to be employed in library research seems to be the forms of data analysis that are employed. For the most part, library research analyzes data through descriptive statistics (frequencies, percentages, means and standard deviations, and correlation coefficients). Those studies that do indicate analyses by inferential statistics are dominated by uses of chi-square and T-tests. Kim and Kim's analysis identified only 6 percent of their 1967-1976 articles as using analysis of variance, multiple regression or factor analysis.[12] Path analysis, log linear models and other more complex statistical techniques have been used rarely in library research although they are increasingly employed in sociological analysis.

An examination of two recent library research textbooks suggests that current library school students are not likely to increase the sophistication of their data analysis techniques. Martyn and Lancaster's introduction to research methods does present information on questioning procedures, sampling and design, including attitude scales, interviews, user panels, diaries, critical incident techniques, and sociometric analysis. But the seventy-one pages devoted to that body of material are scarcely adequate to enable a student to employ these methods independently. The book briefly discusses data analysis, but is not designed to be a comprehensive introduction to it.[13] Busha and Harter's *Research Methods in Librarianship* is so designed, but the discussion on presentation of data offers only linear regression and significance testing.[14]

These works, designed primarily for master's students, are not the only ones used to train library researchers. Many doctoral students do, in fact, use standard social science research texts. However, without a research-literate consumer group—i.e., library practitioners—those who are familiar with more complex analytic tools may be limited in reporting their use in the professional literature.[15]

Although citation analysis has limited value in trying to understand the types of methodologies employed within library research, an examination of the methodological works cited in the professional literature does provide further support for the findings discussed above.

The citation analysis for this study was developed from a bibliographic search of the Institute for Scientific Information (ISI) database.[16] The procedure for carrying it out was as follows:

1. A list was compiled of all journals (N=43) within the ISI database that the author could identify as related to library and information science.
2. A bibliographic search was conducted to identify which of those journals contained "journal articles" with more than one cited reference. This eliminated three of the original library science journals and left a list of forty journals from which the citation search was conducted (see appendix A for a list of these forty journals).
3. A second search provided a list of all articles within the forty journals in the ISI database that contained more than one reference. It also provided bibliographic information on each of the citations for each of the articles—a total of 16,936 references.
4. The list of 16,936 references was then analyzed to identify those that were to sociological journals, books or reports.

The interdisciplinary nature of sociology leads to inherent problems in identifying whether a specific citation should be considered within the field of sociology. The strategy adopted for this study involved two different approaches. First, citations to journals were counted as "sociological" if the journal was included in the citation study of Baughman[17] or the readership analysis of Satariano.[18] Baughman identified twenty-four core sociological journals through an analysis of what was at that time *Social Sciences and Humanities Index*. Satariano analyzed the journals that sociologists reported they read. A total of fifty-nine journals were included in his listing. When duplicates are eliminated these studies provide a set of sixty-one journals that sociologists consider relevant to their work (see appendix B).

No similar studies exist that could be used to identify which of the cited books or reports should be categorized as sociological. For this group of materials, the author used the author and/or title of the work to determine whether it should be considered a sociological reference. Because this way of classifying monographs is subjective and nonsystematic, the author sought to be inclusive: that is, all works that could remotely be expected to be sociological were included in this group of references. Of the 16,936 cited references resulting from the original ISI search, 1327 (7.8 percent) were identified as sociological. Of these, 961 were books or reports and 366 were articles.[19]

In an analysis of 16,936 citations in forty library journals, 113 were identified by the author as related to social science methodology. (References to the handbooks for computerized statistical packages—e.g., *The SPSS Primer*—were not included.) Within these 133 citations, only two

authors were mentioned more than four times: Donald Campbell and Julian Stanley's *Experimental and Quasi-Experimental Designs for Research* (one of the most highly cited social science works, according to Eugene Garfield) was referred to three times and other works of Campbell's were cited twice. Hubert M. Blalock's *Social Statistics* had four references; his *Causal Inferences in Non-experimental Research,* had two references. The wide scattering of references to statistical and methodological works could be categorized as follows: general methodology, statistics, research design, evaluation research, qualitative methods, multivariate techniques, measurement, and content analysis.

TABLE 1
ANALYSIS OF CITATIONS TO SOCIAL SCIENCE METHODOLOGY BY TYPE OF WORK AND NUMBER OF CITATIONS

Type of Work	*Number*	*Percentage of Cited Works (n=113)*
General Methodology	33	29.2
Statistics	29	25.7
Research Design	20	17.7
Evaluation Research	9	8.0
Qualitative Methods	8	7.1
Multivariate Techniques	6	5.3
Measurement	5	4.4
Content Analysis	3	2.6
Total	113	100.0

Of the 113 works cited, only six (5.3 percent) dealt with multivariate analysis, although most of the statistics books also included units on multiple regression and analysis of variance. Over half the works cited were concerned with general social science methodology and research design.

Sociological Theory and Research and Librarianship

Citation analyses are justifiably criticized for their inability to reveal "intellectual indebtedness" and for the biases built into the analysis by the literature base that is used, among other things. Nonetheless, a citation analysis can provide that first level of description of a relationship between fields that can allow further questions to be articu-

lated. For the purposes of this paper, an analysis of the references to sociological literature that are made by those who are writing within the field of library and information studies provides evidence about the age and type of sociological material used in library research. Although library researchers may use sociological materials that are not cited, the study of those that are may reveal a pattern of what within sociology is seen to be significant enough that it must be cited.

The analysis of that body of 1327 references that were considered sociological revealed little acknowledgment of those individuals who are classically important to sociological theory: Marx, Durkheim, and Weber. Max Weber, whose ideas have provided a foundation for organizational theorists, was cited eight times; Marx and Durkheim, once. The one major sociological theorist who is referred to frequently is Robert K. Merton (twenty citations) principally for his works on bureacratic structure and professions.

An analysis of the most frequently cited authors reflects further the limited extent to which sociology is drawn on by library researchers; table 2 shows authors who received ten or more references.

TABLE 2
MOST FREQUENTLY CITED AUTHORS FROM 1327 SOCIOLOGICAL REFERENCES WITHIN LIBRARY LITERATURE

Price, D.	28
Garfield, E.	24
Merton, R.K.	20
Bell, D.	19
Crane, D.	16
Garvey, W.D.	14
Griffith, B.	12
Blau, P.	12
Ziman, J.	10

These nine authors account for only 10.2 percent of the citations analyzed. The remaining 90 percent of the references are scattered widely. Although all have been classified as within the scope of sociology, only four authors can be classified as academic sociologists. The other five are information scientists and other social scientists whose names are included because they publish within what have been categorized as sociological works. The range of journals and books categorized

as sociological for this analysis explain in part the group of authors most frequently cited. For example, *Science* is included as one of the journals read by sociologists in Satariano's study. Its inclusion in this study accounts for most of the citations to Garfield. An analysis of citations to books, reports and journals reflects this same mix of sociological works and items from related fields (see table 3).

TABLE 3
MOST FREQUENTLY CITED JOURNALS AND BOOKS FROM 1327 SOCIOLOGICAL REFERENCES WITHIN LIBRARY LITERATURE

Science	62
American Sociological Review	37
American Journal of Sociology	25
Administrative Science Quarterly	20
**Little Science, Big Science*	16
Journal of Social Issues	16
**Invisible Colleges*	14
American Sociologist	13
Sociology of Education	13
Human Relations	12
**Professionalization*	10
Social Forces	10
Daedalus	7
Psychology Today	6
American Psychologist	6
Society (Transaction)	6
Total	273

*monograph

These 273 citations represent 20.6 percent of the sociological references analyzed. If citations to journals are considered separately, the 233 citations in thirteen journals on this list account for nearly two-thirds (63.7 percent) of the citations in the body of sixty-one journals considered. Thirty-one journals were cited a total of 184 times; twenty-three of the sociological journals identified by Baughman or Satariano received no citation.

It is also illustrative to examine the rank order of these journals with the rank ordering developed by Baughman and Satariano (see table 4).

The citation analysis of sociology references within library literature reveals a mixed pattern of references to those journals that are

TABLE 4

RANK ORDER OF SOCIOLOGICAL JOURNALS CITED IN LIBRARY LITERATURE[a] AND IN SOCIOLOGICAL LITERATURE[b], AND READ BY SOCIOLOGISTS[c]

	Estabrook[a]	*Baughman*[b]	*Satariano*[c]
Science	1.0	NR*	43.0
American Sociological Review	2.0	1.0	1.0
American Journal of Sociology	3.0	2.0	3.0
Administrative Science Quarterly	4.0	19.0	19.0
Journal of Social Issues	5.0	12.0	5.0
American Sociologist	6.5	NR	2.0
Sociology of Education	6.5	NR	18.0
Human Relations	8.0	11.0	32.0
Social Forces	8.0	5.0	4.0
Daedalus	10.0	24.0	9.0
Psychology Today	12.0	NR	7.0
American Psychologist	12.0	NR	26.0
Society (Transaction)	12.0	NR	5.0

*NR=not ranked

[a]Estabrook, Leigh. "Sociology and Library Research" *Library Trends* 32(Spring 1984).

[b]Baughman, James C. "A Structural Analysis of the Literature of Sociology." *Library Quarterly* 44(Oct. 1974):293-308.

[c]Satariano, William A. "Journal Use in Sociology: Citation Analysis vs. Readership Patterns." *Library Quarterly* 48(July 1978):293-300.

highly cited in the sociological literature and those that are frequently read by sociologists, including the "popular" literature such as *Society, Psychology Today,* and *Daedalus.* Inclusion of *Science* and *Administrative Science Quarterly* and the exclusion of such journals as *Journal of Marriage and the Family, Journal of Personality and Social Psychology,* and *American Anthropologist* (ones highly cited in sociology—see appendix B) are clear reflections of the nature of the specific type of interdisciplinary focus within library research. Research and writing in librarianship tend to focus more on managerial and technical and scientific issues than on the interpersonal and community ones.

It was also suggested at the beginning of this paper that one might expect to find the cited sociological literature to be older. The mean date of citation for journal articles is 1968. For all works—books, reports and journals—the mean date of publication is 1972.

This citation analysis has weaknesses similar to all such research. Of greatest significance is the questionable use of the Baughman and Satariano ranked lists as a basis for determining sociological journals. These earlier studies were based on research carried out several years before actual publication of the articles. Since the early to mid-1970s, the

issues raised and even types of publications issued have changed. In consideration of these changes, the citations within library literature were examined by this author independently of the Baughman and Satariano lists. Eight additional journals were identified which contained sociological articles to which library researchers referred. Two journals were highly cited: *Social Studies of Science* (begun in 1975 as a continuation of *Science Studies)* with thirty-seven citations and *International Social Science Journal* (1949-) with eighteen citations. Neither of these was included in the analyses of sociology citation and readership patterns. Important articles by Daniel Bell and Shoshona Zuboff were cited in the *Harvard Business Review* (six citations), as were articles by Nina Toren and other recognized sociologists in the *Sociology of Work and Occupations, The Futurist, Public Administration Quarterly,* and *The Academy of Management Review.* A total of eighty-one additional journal citations that are sociological in subject and by authorship were identified from the original ISI search. A calculation of citations to sociological literature by authors in library science with these items added gives a total of 1408 sociological citations (961 books, 447 articles) or 8.3 percent of the total number of citations in the library science articles surveyed. The other 91.7 percent of the citations within the library literature were to other behavioral sciences, the sciences, or to other library literature. In the future, one might also expect to find the computer magazines and other technological works to contain articles on the sociological impact of information systems and services and the sociology of computing.

Discussion

Despite conditions that make it difficult for researchers to carry out interdisciplinary work, the evidence that has been presented indicates that library research is incorporating both the methodology of sociology and its research findings. The indication that approximately 8 percent of library citations can be considered sociological does not seem insignificant to this author, although individuals may differ in their opinions of what level of citation should be considered significant. Of concern, however, is the relative age of the sociological references and the apparently limited sociological theoretical framework from which library researchers have drawn.

A debate about whether Schön[20] is correct in questioning the relevance of academic disciplines to professional practice is beyond the scope of this paper. Nonetheless, since library research is building on

the work of sociology, it seems important that it do so critically and with full consideration of current sociological thinking and forms of analysis. There are several reasons for making this argument. First, use of sociological techniques for research design and data collection without employing multivariate techniques for data collection limits the researcher's ability to make causal inferences about relationships between variables. It may even lead her or him to make false conclusions about the ways in which different factors should be altered to effect changes in library or user behavior. For example, in the Estabrook and Heim study of members of the American Library Association,[21] simple correlations between variables suggest that gender is the major variable determining salary differences among librarians. Multivariate analysis indicates that rates of publication, activity in professional associations, and other variables are more strongly associated with salary differential than gender; but the nature of the survey design limits further conclusions about the causal relationships among variables.[22]

Second, to draw on limited theoretical work in sociology for hypotheses about librarianship may both limit the ways in which questions about librarianship are formed and the types of research conducted. A cursory examination of the types of sources on the subject of professionalism or professionalization that were cited by library research indicates, for example, a heavy emphasis on one model of professionalization: that which sees occupational groups along a continuum—one that can be traversed from semiprofessional to professional. In this model, professions are characterized by the skills, autonomy and other attributes of their members. The effect of buying into such a theoretical model of professionalism—one that is in fact debated within sociology—is that much of what is written in librarianship begins from the standpoint of whether librarians possess or can acquire the attributes necessary for them to become professionals. Analysis of librarianship as a profession in its relationship to wider social institutions, examination of librarians' professional striving and power relationships, and even consideration of the issue of deprofessionalization of librarianship have been briefly considered by researchers in the library field; but these problems, framed by alternative models of the sociology of occupations, appear to be less frequently identified and discussed.

The challenges that face library research regarding the use of sociological research involve more than adopting increasingly sophisticated analytic techniques and examining competing theoretical models. It also seems important that library researchers seek colleagues who can

comment on their work in an informed manner. The barriers to interdisciplinary work that have been discussed earlier create a situation in which it is difficult to find colleagues who know the limits of certain methods and who are aware of competing theories. To advance such interdisciplinary research requires not only collegial relationships, but also those critical dialogues that provide opportunities for testing the validity of research and alternative explanations.

References

1. Kilpela, Raymond. "Library School Faculty doctorates: A Statistical Review." *Journal of Education for Librarianship* 22(Spring 1982):239-59.

2. Blalock, Hubert M., Jr. *An Introduction to Social Research*. Englewood Cliffs, N.J.: Prentice-Hall, 1970.

3. Allen, Thomas J. *Managing the Flow of Technology: Technology Transfer and the Dissemination of Technological Information within the Research and Development Organization*. Cambridge, Mass.: MIT, 1977.

4. Ibid., p. 48.

5. Schön, Donald A. *The Reflective Practitioner*. New York: Basic Books, 1983.

6. Ibid., p. 147.

7. Ibid., p. 308.

8. Kim, Soon D., and Kim, Mary T. "Academic Library Research: A Twenty Year Perspective." In *New Horizons for Academic Libraries: ACRL 1978* (Papers presented at the First National Conference of the Association of College and Research Libraries, Boston, 8-11 Nov. 1978), edited by Robert D. Stueart and Richard D. Johnson, p. 377. New York: K.G. Saur, 1979.

9. Coughlin, Caroline, and Snelson, Pamela. "Searching for Research in ACRL Conference Papers." *Journal of Academic Librarianship* 9(March 1983):23.

10. Ibid.

11. Peritz, Bluma C. "The Methods of Library Science Research: Some Results from a Bibliometric Survey." *Library Research* 2(Fall 1980):255-56.

12. Kim, and Kim, "Academic Library Research."

13. Martyn, John, and Lancaster, F. Wilfrid. *Investigative Methods in Library and Information Science*. Arlington, Va.: Information Resources Press, 1981.

14. Busha, Charles H., and Harter, Stephen P. *Research Methods in Librarianship: Techniques and Interpretation*. New York: Academic Press, 1980.

15. In preparing a recent article for *American Libraries,* Kathleen Heim and I were asked to explain r^2—the correlation coefficient—in a note to the text. It was thought that too many readers would not be able to interpret the findings otherwise.

16. I am indebted to Vice-president for Research and Graduate Affairs Volker Weiss of Syracuse University, for making the funds available for this research; and to Lane Hart, a graduate assistant at the school, who did much of the data analysis. James S. McPhee, search analyst, Bird Library, Syracuse University, conducted the difficult bibliographic search.

17. Baughman, James C. "A Structural Analysis of the Literature of Sociology." *Library Quarterly* 44(Oct. 1974):293-308.

18. Satariano, William A. "Journal Use in Sociology: Citation Analysis vs. Readership Patterns." *Library Quarterly* 48(July 1978):293-300.

19. The books were selected as "sociological" on the basis of the title. I sought to be inconclusive in my selection—that is, when a title was in question, I included it—and this led to what is probably an overestimation of the number of sociological books or reports that are cited in library literature. This policy of selection and the fact that no independent jury was used should caution the reader about making inferences based on the number of books and reports cited or the ratio of books cited to articles cited.

20. Schön, *The Reflective Practitioner.*

21. Estabrook, Leigh S., and Heim, Kathleen M. "A Profile of ALA Personal Members." *American Libraries* 11(Dec. 1980):654-59.

22. For example, the authors could not answer whether men publish more than women because men have more access to resources or achieve higher positions from which they are encouraged to publish or whether men achieve these positions in part because of their higher rate of publication. An investigator may have hunches about the relationship; but the data do not (and cannot, given the limited design) provide the necessary basis for unravelling the causal relationships.

Appendix A

Library and Information Science Journals Analyzed for Citations to Sociological Literature
(search conducted on BRS 8 October 1983)

American Archivist
ASLIB Proceedings
Behavioral and Social Sciences Librarian
Bulletin of the Medical Library Association
Canadian Journal of Information Science
Canadian Library Journal
College and Research Libraries
Computer Networks
Database
Drexel Library Quarterly
Government Publications Review
IFLA Journal
Information Age
Information Processing and Management
Information Technology in Libraries
International Forum on Information and Documentation
International Library Review
Journal of Academic Librarianship
Journal of Documentation
Journal of Education for Librarianship
Journal of Information Science
Journal of Librarianship
Journal of Library History
Journal of Library History Philosophy and Comparative Librarianship
Journal of the American Society for Information Science

Law Library Journal
Library Acquisitions-Practice and Theory
Library and Information Science
Library Journal
Library Quarterly
Library Resources and Technical Services
Library Trends
Libri
Online
Online Review
Program-Automated Library and Information Systems
RQ
Serials Librarian
Special Libraries
UNESCO Journal of Information Science Librarianship and Archives Administration

Appendix B

Rank Order of Findings for Baughman and Satariano

	James Baughman (1974)
1	*American Sociological Review*
2	*American Journal of Sociology*
3	*Journal of Marriage and the Family*
4	*Journal of Personality and Social Psychology*
5	*Social Forces*
6	*American Anthropologist*
7	*American Political Science Review*
8	*Sociology and Social Research*
9	*Sociometry*
10	*Public Opinion Quarterly*
11	*Human Relations*
12	*Journal of Social Issues*
13	*Human Organization*
14	*Social Problems*
15	*Annals of the American Academy of Political and Social Science*
16	*Journal of Social Psychology*
17	*Child Development*
18	*Sociological Quarterly*
19.5	*Administrative Science Quarterly*
19.5	*British Journal of Sociology*
21.5	*Psychology Bulletin*
21.5	*Rural Sociology*

24 *Daedalus*
24 *Family Process*
24 *Man*

William A. Satariano (1978)

1 *American Sociological Review*
2 *American Sociologist*
3 *American Journal of Sociology*
4 *Social Forces*
5 *Society (Trans-action)*
6 *Social Problems*
7 *Psychology Today*
8 *Sociometry*
9 *Daedalus*
10 *Sociological Quarterly*
11 *Journal of Marriage and the Family*
12 *Sociological Inquiry*
13 *Rural Sociology*
14 *Annals of the American Academy of Political and Social Science*
15 *Pacific Sociological Review*
16 *Journal of Health and Social Behavior*
17 *Public Opinion Quarterly*
18 *Sociology of Education*
19 *Administrative Science Quarterly*
20 *Journal of Personality and Social Psychology*
21 *American Anthropologist*
22 *Journal of the American Statistical Association*

Organization Theory and Its Application to Research in Librarianship

HELEN HOWARD

IN 1964 W. BOYD RAYWARD explored "the possible applications of organization theory to the study of libraries."[1] During the intervening twenty years there has been no general review of organization theory and its application to research in librarianship. The purpose of this article is to provide such a review. It begins with a very brief overview of the development of organization theory, and then, discusses major theories from this area which have been used by researchers to investigate questions related to librarianship. Finally, it comments on the usefulness of the theories and related research for solving problems in librarianship and indicates how organization theory and research could be used in the future by researchers and practitioners.

There are a multitude of definitions for *organization.* The precise wording depends upon the perspective of particular theorists or researchers. For the purpose of this article, organizations are considered to be "social structures created by individuals to support the collaborative pursuit of specified goals."[2] Organization theory as an area of study and research has emerged from work in at least six disciplines: anthropology, sociology, psychology, social psychology, political science, and economics—and three professional schools: business, education, and public administration. In its broadest sense it can be defined as the systematic "study of the structure, functioning and performance of organizations and the behavior of groups and individuals within them."[3] The study of organizations is both a specialized field of inquiry

Helen Howard is Director, McGill University, Graduate School of Library Science, Montreal, Canada.

within the disciplines just mentioned as well as an increasingly recognized focus of multidisciplinary and interdisciplinary research.

The definition of the domain of organization theory is in a confused state. For example, while Pfeffer uses "organizational behavior" and "organization theory" interchangeably,[4] Miner clearly differentiates between the two.[5] In his view, organization behavior theories are of a microanalytic nature and focus on individual and small group theories within the context of an organization. In contrast, he sees organization theory as dealing with macrolevel analyses of intergroup relationships, organization-wide concepts, and organization-environment interactions.

This article will deal with organization theorists and research mainly at the macro level of analysis. In this way I shall attempt not to encroach onto the domain of psychological theory. Thus such topics as motivation, job satisfaction, attitudes, personality, conflict, and resistance to change will not be singled out for review.

Development of Organization Theory

We live in a society in which organizations are pervasive. Most librarians not only work within an organizational context but also are involved with other organizations as part of their professional and personal activities. Although organizations have existed for thousands of years, the history of organization theory begins only in the early part of this century. In spite of an enormous amount of research effort being expended, especially in the last three decades, theory has developed with great difficulty and slowness. There is as yet no cohesive body of theory in the sense of a set of empirically verified propositions that are logically linked. Rather, there is a plethora of points of view, theoretical perspectives, and approaches to analysis.[6] To date, most organization theories are of the middle range and each is incomplete in itself.[7] An overall synthesis has yet to be produced. In parts of the domain, progress in this direction has occurred: Mintzberg has produced an excellent synthesis of theory and research on the structuring of organizations,[8] and Miner has described and evaluated over thirty theories of organization behavior from the point of view of their scientific contribution and usefulness in applications.[9]

Organization theory has evolved through roughly three stages which can be delineated chronologically. In the first third of this cen-

tury, the study of organizations was generally dominated by the "classical" approach, which was largely concerned with the anatomy of the formal organization and managerial practices and was based on the assumptions that man is a rational animal who can be motivated by financial rewards. Dominant concepts included the "one best way" and Weber's "ideal type" of bureacracy.[10]

Partly as a reaction to the view of workers as extensions of machines, the study of organizations in the second third of the century was dominated by an approach generally labeled "human relations" or "neoclassical." Human behavior in organizations and social psychology of work groups and informal groups became the dominant focus of attention. Although their theories were poles apart, both the neoclassical and behavioral writers believed they had come up with the one best way to organize.[11] During the 1950s and 1960s, however, "principles" of organization were questioned, research became more empirical, and experimentation both in the laboratory and in the field increased in importance.

Contemporary organization theory draws heavily on general systems theory.[12] Organizations are considered to be open systems which are basically concerned with structure, interdependence and relationships, including those with the environment.[13] The "one best way" to organize principles has been replaced by the systems theory principle of equifinality—i.e., the assumption that more than one means of reaching a desired state exists. According to the "contingency approach" there is no one best way to structure an organization or manage it. Rather, the choice depends upon many variables—including environmental conditions, resources, technology, type of task, and types and size of staff.

Organization Theory and Research in Librarianship

This review of organization theories which have helped researchers formulate and answer questions related to librarianship concentrates on research conducted in the last ten years. In a few instances, earlier work of particular import is included. The focus is on theories of organizational processes and structure and on research done in North America. The largest proportion of the literature reporting on the application of organization theory to research in librarianship is in the form of doctoral dissertations. Some of the same research also appears as monographs and/or journal articles. Very few other studies exist.

Libraries as Bureaucracies

The study of organizational structure, the study of contextual variables such as size, and the study of characteristics of Weber's bureaucratic model of organization are closely related. Research in librarianship has tested a number of theories or parts of theories relating to these general areas.

Two of the first dissertations to test organization theory in a library setting were completed in 1969. Spence tested in sixty-two Association of Research Libraries (ARL libraries) Weber's theory that, as an organization increases in size, predictable changes occur in other specific characteristics.[14] His data showed a significant correlation among all the measures of size (which could be explained by the fact that ARL membership is dependent upon various measures of size), but no significant correlation between size and any of the other components of the theory.

Plate developed a methodology for the description of middle management personnel in university libraries based on Robert Presthus's model of patterns of accommodation to a bureaucratic milieu.[15] A theoretical model consisting of three new ideal types (the Specialist, the Executive, and the Technocrat) was constructed, but this model has yet to be tested.

Two studies have been conducted on the relationship of the organizational variables of complexity, centralization, formalization, and stratification to the rate of innovation or program change. In four academic libraries, Howard applied some of the theory, variables, and measures developed by Hage and Aiken in a study of social welfare agencies.[16] Howard's study showed that the variables and measures could be used in another type of service organization, and that in general the findings of Hage and Aiken were supported—the rate of innovation related positively to complexity and negatively to centralization, formalization, and stratification. Boyd built on this research to investigate the relationship between complexity, centralization, formalization, and stratification and the rate of change and leadership style in a selection of public libraries.[17] The two kinds of leadership style studied were "consideration" and "initiating structure."[18] He found a negative relationship between centralization, formalization, stratification, and rate of change and little positive relationship between complexity and rate of change. Also, there was little perceived relationship between leadership styles and the rate of change.

Maag examined the relationship between program change and five organizational variables—complexity, formalization, stratification, job

satisfaction, and decision-making style—within 104 academic libraries.[19] He found three correlations to be statistically significant and in the direction hypothesized: program change was correlated positively with extra-organizational activity and negatively with centralization of decision-making and salary stratification. In addition, he found a significant relationship between program change and institutional level—i.e., libraries in baccalaureate-master's institutions tended to implement more new programs and services than did libraries in institutions with doctorates.

Mittermeyer's research is the first empirical study to compare public libraries in two administrative settings—board-administered and municipally integrated—to determine whether there are significant differences in the distribution of power (as measured by professional input to decision-making) and in professional attitudes.[20] She used Hage and Aiken's theory and measures for "centralization" and "complexity" and Richard Hall's professionalism scale to study nine board-administered libraries in Ontario and nine municipally integrated libraries located in several states.[21] She did not find any significant differences in the levels of centralization and complexity in the two settings. Professional attitudes differed significantly in only one measure—belief in service to the public was significantly greater in the municipally integrated libraries.

Elliott Jaques has developed a general theory of the nature of work in bureaucratic organizations and a measure of the level of work based on the longest period of time that a person has to complete an assigned role.[22] Donald Gould is applying Jaques's theory and measurement methodology to a study of the levels of work of librarians in technical service departments of academic libraries.[23]

Contingency Theory

The contingency theory of organizations developed by Lawrence and Lorsch, building on work done by Burns and Stalker, postulates that an effective organization has a structure which is consistent with its environmental needs.[24] They drew a distinction between three main subsystems of an organization—marketing, economic-technical, and scientific—and hypothesized that the structure of each subsystem would vary with the predictability of its own environment. The major organizational factors with which Lawrence and Lorsch are concerned are "differentiation" and "integration." Differentiation refers to the differences in formal structure, time goal and interpersonal orientations

among departments of an organization, while integration is the perceived unity of effort among the departments.

Vorwerk was the first to apply the theory to a study of academic libraries.[25] He modified the instruments for use in two academic libraries at the divisional rather than the departmental level—public services, technical services, and systems offices—which he viewed as similar to market, economic-technical, and scientific subsystems. His data showed that the libraries were relatively undifferentiated at this level. Benson susbequently applied the Lawrence and Lorsch theory to the study of the departmental structure of six academic libraries.[26] Although not all the hypotheses were supported, the data did show that the higher performing libraries (measured by circulation, reference questions, in-house circulation, and library attendance) had organizational structures consistent with their environments as measured in terms of task clarity and difficulty. He found the libraries to be relatively undifferentiated at the departmental level.

Hook also investigated differentiation in academic libraries.[27] Two hypotheses guided his study of three medium-sized libraries: (1) that the three libraries do not differ significantly from each other in the degree to which their subsystems are integrated and differentiated; and (2) departments with the same function in each of the libraries resemble one another more in differentiation characteristics than they do other departments in the same library. Again, the data showed that there was not a significant difference among any of the subsystems in the three libraries.

Zuck examined the relationship between the stability of a library environment and the extent of centralized decision-making in twenty ARL libraries.[28] The independent variable was an index number developed from the percentage of budgetary fluctuations in the period 1965-75. One hypothesis was that unstable library environments would be related to the centralization of decision-making. The findings, however, indicated that decision-making tended to be centralized regardless of the stability of the environment as measured.

Organizational adaptation to the environment was studied by Shonam in his investigation of how six public libraries in California responded to a reduction in financial resources and changes in the composition of populations served.[29] The three factors found to be highly correlated with adaptive behavior were management style, the director's goals and values, and the organization's strategy.

Decision-Making

Decision-making is a key process in any organization. There is no single, cohesive theory of decision-making but a major influence has been exerted by Herbert Simon. A central thesis in Simon's thinking is that rational decision-making is limited or bounded. Under bounded rationality, the decision-maker, instead of maximizing—i.e., instead of selecting the best alternative from among all those available to him—searches only until he finds a course of action which satisfices or is "good enough."[30] Other major themes include a model of the decision-making process—the intelligence, the design and the choice activities—and the distinction between programmed and nonprogrammed decisions.[31]

Two studies have applied different aspects of Simon's theories. Curran investigated the influence of the New Jersey statewide plan for library services upon the decision-making process of area librarians.[32] The plan was shown to influence more programmed, routine decision-making than nonprogrammed, novel decision activity. Davis's work is a case study of "innovative decision-making" in the establishment of OCLC.[33] She found two contrasting modes. From 1963 to 1965, members of interlibrary cooperation committees followed the satisficing mode of decision-making. However, from 1965 to 1966 they followed a mode which resulted in a distinctive innovative choice.

Two other studies have focused on decision-making regarding OCLC. Luquire, in his study of twenty-three ARL libraries, found that the greater the participation in decision-making, the more positive was the evaluation of OCLC.[34] Musmann examined the details of the decision-making process leading to the adoption of OCLC by the library system of the California State University and Colleges.[35] He found that the organization's large size, complexity, and the decentralization of power within it contributed to an environment of slow decision-making.

McClure has been investigating the role of the "information rich" in decision-making in academic libraries.[36] His data support the hypothesis that those people who are identified as the information rich tend to be involved in library decision-making. Likert's "Profile of Organizational Characteristics" has been used by several investigators to determine the degree of staff participation in decision-making.[37] An early investigation by Hess gathered data from 582 respondents in 98 academic and 90 public libraries in California.[38] He found that

although "consultative" practices generally prevailed, actual decision-making tended to be concentrated at or near the top of the organizational hierarchies. On the basis of these findings, Hess recommended that work groups be trained in participation and foresaw a resulting increase in organizational productivity.

Marchant investigated the influence of professional librarians' participation in decision-making upon the effectiveness of twenty-two university libraries.[39] Although he did not find any statistically significant relationships between participation in decision-making and his performance measures, he reported a significant relationship between participation in decision-making and staff satisfaction. Stewart, in a study of six college libraries, found no direct relationship between the degree of staff participation in the operation of these libraries and selected performance measures.[40] In general, research has not demonstrated that participation in decision-making causes high performance in an organization as a whole.

Design and Structure

Organization design may be defined as "the process of specifying optimal combinations of organizational characteristics to achieve desired organizational outcomes,"[41] while organization structure is "the organization's official arrangement of roles, authority, relationships, and communication patterns."[42] This section covers theory and research on aspects of organizational design and structure which have not already been reviewed under other headings.

Alfred Chandler, after an extensive analysis of case history data, developed the thesis that "structure follows strategy" in the life cycle of an industrial firm.[43] Strategy refers to long range plans which answer the question, "what business are we in?" He concluded that growth without structural adjustment led to economic inefficiency.[44] Wicker tested Chandler's theory in his study of the organizational growth of fifty-five large university libraries.[45] He concluded that, although the organizational structures of American university libraries do not change as frequently as that of profit-oriented corporations, they do pass through the phases identified by Chandler and structure does follow managerial strategy.

Open systems theory perceives structure as a dynamic relationship between the various components of an organization. Organizations have boundaries, which, although they separate the organization from its environment, are permeable.[46] Boundaries delineate the "domain" of

an organization's activities but may be rather vaguely formed. Boundaries can be set to include an entire organization or to delineate subsystems such as departments or divisions. Boundary-spanning units or individuals serve as boundary agents between various subsystems or between an organization and environmental systems.[47]

Sloan's investigation of the organization of collection development in large university libraries was guided by four concepts from organization theory: organizational environment, structure or design, task structure, and technology.[48] She developed variables and measures for each of these concepts and collected data through interviews in eleven ARL libraries. Results support the view that collection development is a boundary-spanning activity and suggest that the rate of change in the environment may be related to formal structure.

Martell, using several concepts from organization theory—relationship with the environment, boundary spanning, work systems design, and quality-of-work-life principles—developed a structural model of academic libraries which is intended to lead to improvements in the client orientation of academic research libraries in response to (1) the demands of post-industrial society, (2) the opportunities offered by contemporary technologies, and (3) the need for more meaningful roles.[49] The main thrust of Martell's design is the creation of small client-centered units within which librarians engage in multifunction activities including advanced reference, collection development, computerized literature searching, and library instruction. These activities would be boundary spanning in that librarians would be in direct contact with specific user groups. He suggests the creation of a prototype work group and presents an outline for planning, implementing and evaluating the prototype.

Putnam examined the relationship between organization structure and work group performance in a large research library.[50] The findings show significant values on most of the pairings of the effectiveness variables, Group Performance and Adaptability, with most of the structural characteristics. The findings are discussed as diagnostics for organization design decisions.

Technology

Perrow theorized that the technology of an organization is a major determinant of its structure and other organizational characteristics.[51] Lynch undertook to delineate empirically the dimensions of Perrow's technology construct and to develop a valid and reliable measure that

could be used to compare the technologies of library departments.[52] She considered three aspects of technology: (1) the nature of the raw materials entering a department, (2) the nature of the technology used to convert the raw materials into finished products, and (3) what an organization's members must know to convert the materials into a finished product or service. She developed a seven-item scale which was shown to be a reliable measure of the technology construct in fifteen departments assigned the functions of book selection, acquisitions, cataloging, circulation and reference in three academic libraries. The scale was successful in discriminating among the departments as to technology, but the differences were small.

Organizational Climate

The term *organizational climate* refers to "a set of attributes specific to a particular organization that may be induced from the way that organization deals with members and its environment."[53] Organizational climate is composed of two interrelated sets of characteristics—organizational characteristics and psychological characteristics. Samuels undertook the development of a valid and reliable instrument for measuring public librarians' perceptions of organizational climate.[54] The instrument developed was a modification of the Educational Testing Services' "Institutional Functioning Inventory" and consisted of eleven scales. These were tested in twenty medium-sized public libraries. Eight of the scales were found to be sufficiently reliable and valid to be used in further research. Stellingwerf used the Modified Institutional Functioning Inventory to measure organizational climate in thirty public libraries.[55] She then examined the relationship between organizational climate and the ability of the staff to estimate user needs. She found no significant relationship.

Research by Social Scientists

Social scientists have largely ignored the study of libraries as organizations. Recent exceptions are two studies funded by the National Endowment for the Humanities, the National Enquiry into Scholarly Communication, and the Educational Testing Service and conducted by sociologists Hugh Cline and Loraine Sinnott.[56] In the first study, published as *Building Library Collections*, the researchers stated that they planned to share with professional librarians the "social-science

prism of organization, structure, and function," and to "make a basic contribution to the social-science study of complex organizations."[57] Employing a comparative case study approach, they interviewed 340 librarians, faculty, and administrators in seven academic libraries. They attempted to synthesize findings around five theoretical issues including organizational boundaries. However, the information provided is slight and interpretations are simplistic.

The second study, entitled *The Electronic Library,* examines the effect of automation on the structure and functioning of four university libraries. The case study approach again was used and 216 librarians and administrators were interviewed. Theoretical background is provided, especially on the issues of organizational design and leadership. The investigators speculate on several changes including: (1) reorganization of libraries as a result of a greatly diminished workload for acquisitions and original cataloging, (2) the adoption of a matrix form of organization, and (3) the grouping of library staff to serve subject fields and disciplines with librarians having multiple functional assignments within their specific disciplines.

Theory, Research and Practice

How useful has organization theory and the research it spawned in librarianship been in solving practitioners' problems? The answer must be, "not very"—so far. There are at least four reasons: (1) the lack of cohesiveness and synthesis in organization theory, (2) the almost random and noncumulative nature of most applications of organization theory to research in librarianship, (3) the lack of wide dissemination of research results, and (4) the apparent lack of awareness and/or interest on the part of all but a few library administrators and practitioners to apply the results of this research to their organizational problems.

Although this review of applications of organization theory to research indicates that a considerable amount of research has been undertaken, the research tends to be fragmented and has often produced results which are inconclusive or not generalizable. Nevertheless, some foci are emerging—e.g., the areas of structural design and decision-making. In addition, some successful attempts have been made to develop reliable and valid measures appropriate for use in studying libraries as complex organizations.[58]

Even in its imperfect state, organization theory applied to research in librarianship offers many opportunities for identifying, understand-

ing and solving problems which have not been grasped by administators and practitioners. However, some librarians are responding to the challenge to think creatively about their organizations. Some are realizing that organizational structural arrangements are not immutable but consist of a complex set of variables over which they can exercise considerable control.[59]

Bureaucratic models of organization dominate most libraries. Few major changes have been reported in the literature; those which have been reported are for the most part occurring in academic libraries. The most current example is the reorganization taking place at the University of Illinois—Urbana-Champaign Library.[60] The reorganization, which is expected to be completed in 1984, abolishes the division between technical and public services and creates structures in which groups of librarians are defined not by the functions they perform but by the service they provide across the full range of librarianship to a particular type of user. This reorganization applies concepts from organization theory and is patterned after Martell's model.[61] This model has similarities to but goes considerably beyond the organizational structure recommended by Booz, Allen and Hamilton for Columbia University.[62]

Other examples of restructuring include the abolition of the conventional public services/technical services structure. At the Bowling Green State University Library functions are grouped under (1) Access Services (circulation, cataloging, acquisitions, interlibrary loan, duplicating, and processing), (2) Information Services (computer searching, collection development, library user education, and reference), and (3) Special Collections.[63]

The matrix model of organizational structure which draws heavily on the social and behavioral sciences is proffered in the literature as an alternative to heirarchical structures.[64] The first North American library reported to have implemented a matrix structure was the Elyria (Ohio) Public Library but the experiment was short-lived.[65] In 1982 the San Francisco State University Library introduced a modified matrix model in Readers' Services. To date, staff reactions are positive.[66]

Organizational processes are interrelated with structural considerations. There is an abundance of general descriptions in the literature. Accounts of actual implementation of, for example, decision-making mechanisms to lead to greater staff input, are scattered throughout the literature of decision-making, participatory management, status, and management and leadership styles.[67] What is lacking is critical analysis of changes in the decision-making process and its ramifications.

The Future of Organization Theory in Research in Librarianship

Organization theory, although developing slowly and with difficulty, could be an important resource for investigating problems in librarianship. There is a need, however, for organizational theorists to pull theories together, to synthesize. In addition, much work needs to be done on developing improved measures. In spite of these difficulties, organization theory could and should play an important role in aiding research and solving problems in librarianship in the future. There are pitfalls, however, for librarians as researchers in this area. Lynch describes the problem well:

> The library researcher who borrows a theory...must fully understand its assumptions and limitations and must be thoroughly familiar with the empirical evidence which tends to support or limit the application of the theory to the problems of librarianship. Naive or uninformed use of approaches found useful in other disciplines can be damaging, particularly if library administrators act on the basis of the invalid generalization. It is therefore important that studies that borrow from other fields be monitored critically so that only well-founded research will be accepted.[68]

As practitioners increase their knowledge of organization theory, and as researchers from a variety of disciplines improve their tests of organization theory in library settings, knowledge of libraries as complex organizations will increase. Improvements in understanding and applications of organization theory should assist librarians in coping with rapid change and a turbulent environment.

References

1. Rayward, W. Boyd. "Libraries as Organizations." *College & Research Libraries* 30(July 1969):312.

2. Scott, W. Richard. *Organizations, Rational, Natural, and Open Systems.* Englewood Cliffs, N.J.: Prentice-Hall, 1981, p. 9.

3. *Organization Theory; Selected Readings,* edited by Derek S. Pugh, p. 9. Harmondsworth, England: Penguin Books, 1973.

4. Pfeffer, Jeffrey. *Organizations and Organization Theory.* Boston: Pitman 1982, p. ix.

5. Miner, John B. *Theories of Organizational Behavior.* Hinsdale, Ill.: Dryden Press, 1980, p. v.; and _____. *Theories of Organizational Structure and Process.* Chicago: Dryden Press, 1982, p. vii.

6. A number of compendia are available: e.g., *The Handbook of Organizations,* edited by James G. March. Chicago: Rand McNally, 1965; *The Social Psychology of Organizations,* 2d ed., edited by Daniel Katz and Robert L. Kahn. New York: Wiley, 1978; *Handbook of Organizational Design,* edited by Paul G. Nystrom and William H. Starbuck. New York: Oxford University Press, 1981; *Handbook of Industrial and Organiza-*

tional Psychology, edited by Marvin D. Dunnette. Chicago: Rand McNally, 1976; and *The Study of Organizations: Findings from Field and Laboratory*, edited by Daniel Katz, et al. San Francisco: Jossey-Bass, 1980. Overview articles which are classics in the field include Perrow, Charles. "The Short and Glorious History of Organizational Theory." *Organizational Dynamics* 10(Summer 1973):2-15; Scott, William G. "Organization Theory: an Overview and an Appraisal." *Academy of Management Journal* 4(April 1961):7-26; and Scott, William G. "Organization Theory: a Reassessment." *Academy of Management Journal* 17(June 1974):242-54.

Examples of the sociological viewpoint are: W. Richard Scott. *Organizations: Rational, Natural and Open Systems;* Hage, Jerald. *Theories of Organizations: Form, Process, and Transformation*. New York: Wiley, 1980; and Hall, Richard A. *Organizations: Structure and Process*, 3d ed. Englewood Cliffs, N.J.: Prentice-Hall, 1982. A social psychological approach is used by Pfeffer in attempting to summarize and integrate previous contributions in Pfeffer, *Organizations and Organization Theory;* and Weick, Karl E. *The Social Psychology of Organizing*, 2d ed. Reading, Mass.: Addison-Wesley, 1979.

7. Merton, Robert K. *Social Theory and Social Structure*, rev. and enl. ed. Glencoe, Ill.: Free Press, 1957.

8. Mintzberg, Henry. *The Structuring of Organizations: a Synthesis of the Research*. Englewood Cliffs, N.J.: Prentice-Hall, 1979.

9. Miner, *Theories of Organizational Behavior;* _____ . *Theories of Organizational Structure and Process.*

10. Taylor, Frederick W. *The Principles of Scientific Management*. New York: Harper & Row, 1911; and Weber, Max. *The Theory of Social and Economic Organization*, translated by A.M. Henderson and Talcott Parsons. New York: Oxford University Press, 1947.

11. Representative works from this period are: Roethlisberger, Fritz J., and Dickson, William D. *Management and the Worker: An Account of a Research Program Conducted by Western Electric*. Cambridge, Mass.: Harvard University Press, 1939; Argyris, Chris. *Organization and Innovation*. Homewood, Ill.: Richard D. Irwin, Inc. 1965; Likert, Rensis. *New Patterns of Management*. New York: McGraw-Hill, 1961; and McGregor, Douglas M. *The Human Side of Enterprise*. New York: McGraw-Hill, 1960.

12. Von Bertalanffy, Ludwig. "An Outline of General Systems Theory." *British Journal for the Philosophy of Science* 1(Aug. 1950):134-65.

13. A seminal theoretical perspective incorporating environmental uncertainty into an organizational model was provided by Thompson, James D. *Organizations in Action*. New York: McGraw-Hill, 1967. More recent works explicating this approach include Aldrich, Howard. *Organizations and Environments*. Englewood Cliffs, N.J.: Prentice-Hall, 1979; and Kast, Fremont E., and Rosenzweig, James E. *Organization and Management: A Systems and Contingency Approach*, 3d ed. New York: McGraw-Hill, 1979.

14. Spence, Paul Herbert. "A Comparative Study of University Library Organizational Structure." Ph.D. diss., University of Illinois, 1969.

15. Plate, Kenneth H. "Middle Management in Univerity Libraries; the Development of a Theoretical Model for Analysis." Ph.D. diss., Rutgers University, 1969; and Presthus, Robert V. *The Organizational Society: an Analysis and a Theory*. New York: Knopf, 1962.

16. Howard, Helen A. "The Relationship Between Certain Organizational Variables and the Rate of Innovation in Selected University Libraries." Ph.D. diss., Rutgers University, 1977; _____ . Organizational Structure and Innovation in Academic Libraries." *College & Research Libraries* 42(Sept. 1981):425-34; and Hage, Jerald, and Aiken, Michael. "Program Change and Organizational Properties: a Comparative Analysis." *American Journal of Sociology* 72(March 1967):503-09.

17. Boyd, Dock A. "Leadership, Organizational Dynamics and Rate of Change in Selected Public Libraries in the Northeastern United States." Ph.D. diss., Rutgers University, 1979.

18. Korman, Abraham K. "'Consideration,' 'Initiating Structure,' and Organizational Criteria—A Review." *Personnel Psychology* 19(Winter 1966):349-61.

19. Maag, Albert Frank. "Some Correlates of Program Change in Large Academic Libraries." Ph.D. diss., Ohio State University, 1975.

20. Mittermeyer, Diane. "The Concept of Bureaucracy in Public Library Administration: A Study of Selected Organizational Variables in Two Different Library Administrative Settings." Ph.D. diss., University of Toronto, 1984.

21. Hage, Jerald, and Aiken, Michael. "Relationship of Centralization to Other Structural Properties." *Administrative Science Quarterly* 12(June 1967):72-92; and Hall, Richard H. "Professionalization and Bureaucratization." In *Comparative Organizations: The Results of Empirical Research*, edited by Wolf V. Heydebrand, pp. 490-506. Englewood Cliffs, N.J.: Prentice-Hall, 1973.

22. Jaques, Elliott *A General Theory of Bureaucracy*. London: Heinemann, 1976.

23. Gould, Donald P. "An Examination of the Levels of Work in Academic Technical Services Departments Utilyzing a Time-Stratified-Systems Theory." Ph.D. diss., University of Southern California, 1984.

24. Burns, Tom, and Stalker, G.M. *The Management of Innovation*. London: Tavistock Publications, 1961; and Lawrence, Paul R., and Lorsch, Jay W. *Organization and Environment: Managing Differentiation and Integration*. Boston: Harvard Business School, 1967.

25. Vorwerk, Richard James. "The Environmental Demands and Organizational States of Two Academic Libraries." Ph.D. diss., Indiana University, 1970.

26. Benson, James Allen "Differentiation, Integration, and Leadership Style in Academic Libraries." Ph.D. diss., Rutgers University, 1977.

27. Hook, Robert Douglas. "A Comparative Study of Three Medium-Sized Academic Libraries Using a Contingency Theory of Management." Ph.D. diss., University of Southern California, 1980.

28. Zuck, Gregory James. "Unstable Environments and Centralization of Decision-Making in Large Academic Libraries." Ph.D. diss., University of Wisconsin-Madison, 1980.

29. Shonam, Snunith. "Organizational Adaptation to the Environment: The Case of the Public Library." Ph.D. diss., University of California at Berkeley, 1982.

30. Simon, Herbert A. *Administrative Behavior: a Study of Decision-Making Processes in Administrative Organization*, 3d ed. New York: Free Press, 1976, p. xxix.

31. _____. *The New Science of Management Decision*. New York: Harper & Row, 1960, chapt. 1.

32. Curran, Charles C. "Relationships Between a Model for Library Growth and Development and Decision Making by Library Leaders. Ph.D. diss., Rutgers University, 1977.

33. Davis, Jinnie Yeh. "Individuals, Information and Structure in the Establishment of OCLC; a Study of Innovation Decision Making." Ph.D. diss., Indiana University, 1980.

34. Luquire, Wilson C. "Selected Factors Affecting Library Staff Perceptions of an Innovative System: A Study of ARL Libraries in OCLC." Ph.D. diss., Indiana University, 1976; and _____. "Attitudes Toward Automation/Innovation in Academic Libraries." *Journal of Academic Librarianship* 8(Jan. 1983):344-51.

35. Musmann, Klaus. "The Adoption of OCLC by the California State University and Colleges: A Case Study of the Diffusion of a Technological Innovation in a Complex Library Organization." Ph.D. diss., University of Southern California, 1981.

36. McClure, Charles R. "Academic Librarians' Contact With Information Sources and Library Decision-Making." Ph.D. diss., Rutgers University 1977; and _____. *Information for Academic Library Decision-Making: The Case for Organizational Information Management*. Westport, Conn.: Greenwood Press, 1980.

37. Likert, Rensis. "Appendix II: Profile of Organizational Characteristics." *The Human Organization: Its Management and Value*, pp. 196-211. New York: McGraw-Hill, 1967.

38. Hess, Edward Jorgen. "A Study of Human Response to California Library Organization and Management Systems." Ph.D. diss., University of Southern California, 1970.

39. Marchant, Maurice P. "The Effects of the Decision-Making Process and Related Organizational Factors on Alternative Measures of Performance in University Libraries." Ph.D. diss., University of Michigan, 1970; _____. "Participative Management as Related to Personnel Development." *Library Trends* 20(July 1971):48-59; Lynch, Beverly. "Participative Management in Relation to Library Effectiveness." *College & Research Libraries* 33(Sept. 1972):382-90; and Marchant, Maurice P. "And a Response." *College & Research Libraries* 33(Sept. 1972): 391-97.

40. Stewart, Henry R., Jr. "Staff Participation in the Management of College Libraries and its Relationship to Library Performance Characteristics." Ph.D. diss., Indiana University, 1972.

41. Connor, Patrick E. *Organizations: Theory and Design*. Chicago: Science Research Associates, 1980, p.58.

42. Ibid., p. 347.

43. Chandler, Alfred D. *Strategy and Structure: Chapters in the History of the American Industrial Enterprise*. Cambridge, Mass.: MIT Press, 1962.

44. Ibid., p. 16.

45. Wicker, William Walter. "The Growth and Development of Organizational Structures of University Libraries." Ph.D. diss., Florida State University, 1977.

46. Thompson, James D. *Organizations in Action*. New York: McGraw-Hill, 1967.

47. Aldrich, Howard, and Herker, Diane. "Boundary-Spanning Roles and Organizational Structure." *Academy of Management Review* (April 1977):217-30.

48. Sloan, Elaine Carol Frank. "The Organization of Collection Development in Large University Research Libraries." Ph.D. diss., University of Maryland, 1973.

49. Martell, Charles R., Jr. "An Experimental Design for Restructuring and Redesigning the Functions of Academic Research Libraries." Ph.D. diss., University of California at Berkeley, 1979, p. 130; and _____. *The Client-Centered Academic Library: An Organizational Model*. Westport, Conn.: Greenwood Press, 1983.

50. Putnam, Lee. "Organization Structure and Work Group Performance." Ph.D. diss., University of Maryland, 1983.

51. Perrow, Charles. "A Framework for the Comparative Analysis of Organizations." *American Sociological Review* 32(April 1967):195-208.

52. Lynch, Beverly P. "Library Technology: A Comparison of the Work of Functional Departments in Academic Libraries." Ph.D. diss., University of Wisconsin—Madison, 1972; _____. "A Framework for a Comparative Analysis of Library Work." *College & Research Libraries* 35(Nov. 1974):432-43; and _____. "An Empirical Assessment of Perrow's Technology Construct." *Administrative Science Quarterly* 19(Sept. 1974):338-56.

53. Campbell, John P., et al. *Managerial Behavior, Performance and Effectiveness*. New York: McGraw-Hill, 1970, pp. 389-90.

54. Samuels, Alan R. "The Development of an Instrument for Measuring Public Librarians' Perceptions of Organization Climate." Ph.D. diss., Rutgers University, 1979; and _____. "Assessing Organizational Climate in Public Libraries." *Library Research* 1(Fall 1979):237-54.

55. Stellingwerf, Marjorie Anne. "A Study of the Relationship Between Public Librarians' Perceptions of Organizational Climate as Measured by the Modified IFI and Their Ability to Estimate User Needs." Ph.D. diss., Rutgers University, 1981.

56. Cline, Hugh F., and Sinnott, Loraine T. *Building Library Collections: Policies and Practices in Academic Libraries*. Lexington, Mass.: D.C. Heath, 1981; and _____. *The Electronic Library: The Impact of Automation on Academic Libraries*. Lexington, Mass.: D.C. Heath, 1983.

57. _____. *Building Library Collections*, p. xiii.

58. For example, Lynch developed a scale to measure Perrow's technology construct (see Lynch, Beverly P. "A Framework for a Comparative Analysis") and Samuels developed eleven scales, eight of which were found to be sufficiently reliable and valid to be used in further research on organization climate (see Samuels, Alan R. "The Development of an Instrument").

59. Howard, Helen A. "The Relationships Between Certain Organizational Variables," p. 179; and Shaughnessy, Thomas W. "Technology and the Structure of Libraries." *Libri* 32(June 1982):154.

60. Gorman, Michael. "Reorganization at the University of Illinois-Urbana/Champaign Library: A Case Study." *Journal of Academic Librarianship* 9(Sept. 1983):223-25.

61. Martell, Charles R., Jr., "An Experimental Design."

62. Booz, Allen & Hamilton, Inc. *Organization and Staffing of the Libraries of Columbia University: A Case Study.* Westport, Conn.: Redgrave Information Resources, 1973.

63. Repp, Joan, Chair, Access Services, Bowling Green State University Library to Howard, personal communication, 12 Oct. 1983.

64. Sayles, Leonard R. "Matrix Management: the Structure With a Future." *Organizational Dynamics* 4(Autumn 1976):2-17. Also reprinted in the *Management Process: A Selection of Readings for Librarians,* edited by Ruth Person, pp. 194-214. Chicago: ALA, 1983.

65. Sager, Don. "The Comfortable Pullman." *American Libraries* 1(June 1970): 587-92.

66. Euster, Joanne R., and Haikalis, Peter D. "A Matrix Model of Organization for University Library Public Services" (Handout at poster session, American Library Association Annual Conference, Los Angeles, 27 June 1983). Unpublished.

67. Cases describing staff participation in decision-making include: Beckman, Margaret, and Brown, Nancy Ann. "The Role of the Librarian in Management." *Special Libraries* 66(Jan. 1975):19-26; Howard, Edward N. "The Orbital Organization." *Library Journal* 95(1 May 1970):1712-15; Bechtel, Joan. "Collegial Management Breeds Success." *American Libraries* 12(Nov. 1981):605-07; and Breivik, Patricia Senn. "A Model for Library Management." In *Personnel in Libraries,* edited by Karl Nyren, pp. 4-9. New York: R.R. Bowker, 1979.

68. Lynch, Beverly, "Participative Management," p. 382.

This Page Intentionally Left Blank

Research in Public Administration

ANN PRENTICE

PUBLIC ADMINISTRATION like library and information science, is an applied social science. It is as difficult to define and as diverse as library and information science. Like library and information science, it is relatively new in its current broad scope and its content is in a period of rapid change. Before looking at research in public administration as a source of information for library and information science research, the groundwork needs to be laid. This includes a brief overview of the discipline called public administration and a comparison of that discipline with one called library and information science. Then it will be possible to look at research in public administration, its development and present status, to see how findings relate directly to needs and issues in library and information science. Finally we will predict the future direction of public administration research and estimate what direct applications it may have for library and information science research.

Definition of Public Administration

Public administration has been called many things; a subset of political science or at least its offspring, a process of government that has been formalized into a discipline, and even a subject matter in search of a discipline. Public administration is a process and as such has been around as long as governments have existed. As a discipline, it is

Ann Prentice is Director, The Graduate School of Library and Information Science, University of Tennessee, Knoxville, Tennessee.

primarily an American idea that grew out of the late nineteenth-century movement for government reform, the scientific management theories of Frederick Taylor et al. and the new discipline of political science.[1] It has a relationship to political science in that its field of endeavor is the body politic, but where political scientists look at the political aspect of an activity, public administrators deal with the implementation of policy. They are administrators who operate in the public sector and are involved in all of those activities that are necessary for the smooth operation of departments, programs and activities that are the outcomes of policy decisions made by the bodies politic. Public administration may be more profession than discipline, in that it combines theory and practice and is both science and art.

Public administration differs from business administration in that it functions in the public not-for-profit sector, and decision-making derives from policy set by legislative or administrative action rather than from the profit motive. Although much of the activity of the public administrator is similar to that of the business administrator, major differences exist in the purpose of the activity being administered, the sources of funding, and the types of accountability.

Formal education for public administration was part of the French system in the eighteenth century where professional schools were developed to provide qualified technicians for public service. The tradition of a strong civil service was modified in the American setting by the party system of government. A group skilled in carrying out the policies and programs of governments is present at each level of government in the United States. Since the 1930s, public administration has become more than carrying out policies and has come to include the development of policies to foster and maintain public growth.[2]

After World War II, public administrators went through a period of self-doubt and self-criticism. For many of them, being good policy implementers and managers was no longer enough. Theoretical questions concerning the discipline, if it in fact was a discipline, were posed. The scope of their role and concerns changed from that of being responsible for the traditional planning, organizing, staffing, reviewing, and budgeting activities to a much broader charge. Public administrators realized that study of the organization should encompass the study of human behavior and study of budgeting should include the study of theory as well as practice. Public administrators became aware of interconnections between science and technology and between policy and administration.

This change in viewpoint, which was a response to social and technological change, poses problems in outlining the intellectual boundaries of public administration. Administration of activity in the public sector is still at the core, but the full implications of this work are not fully recognized. The concern of the 1930s with budgets became, in the 1960s, work with the development of techniques for analyzing costs and benefits of programs. This is only one indication of the shift in public administration away from structures and processes and toward systems analysis. The human relations movement of the 1930s became, by the 1970s, an interest in organizational development. The basic activities of administration have been enriched by moving further out into those areas of concern and beyond the how to the why. This is not a universal trend among public administrators, some of whom would prefer to leave questions of theory and definition of profession alone and be allowed to do their work in peace. For the most part, however, these shifts of interest indicate that the time of the generalist public administrator is waning and the period of the specialist is arriving. What still holds this discipline or profession together as its members continue to move out in different directions is its philosophy of public service.

As it is currently practiced, public administration can be defined by the following functions:

1. Establishment of objectives and priorities.
2. Development of operational plans.
3. Organizing and staffing.
4. Directing.
5. Controlling.
6. Dealing with external units of the organization.
7. Dealing with independent organizations.
8. Dealing with the press and public.[3]

Overlay this with the research implications of each function such as the study of how decisions are made, the study of the implications of work restructuring, the search for efficiency, the identification of hidden costs, and the study of client groups and their interaction with public programs and a definition of public administration as a scholarly discipline begins to emerge.

Similarities to Library and Information Science

Library and Information Science and Public Administration have a number of commonalities which make the research in one field useful to

those in the other. Both are applied social sciences, both operate in a multiplicity of environments, and both provide services that enhance the activities of others such as implementing policy or providing necessary information. As library and information science has developed in the past several decades, it has moved, like public administration, from an emphasis on how to do a specific job to a broader view of the role of information and information service in society. In both disciplines, the view of what is important to know and to investigate has expanded, and in similar terms. Librarians need to have a grater understanding of organizational structure, systems analysis, the behavioral aspects of internal management, and relationships with client groups.

The division between those who wish to explore librarianship in its widest definition and those who want to be left alone to be librarians has its parallel in public administration. The self-scrutiny of our performance and profession and the over-involvement in self-study, the problem of self-definition in a period of rapid change, and the sense that we are on the threshold of coming into our own characterize both professions. We both have the experience of seeing other disciplines reinventing our research and not being aware that they are doing so—e.g., those in applied anthropology in their study of organizations and those in computer science investigating the nature of information. Both are complex professions with so many facets that we have difficulty defining the scope of what we are and do. Often the specialist in one discipline is closer to the specialist in the other than to members of the same discipline, e.g., personnel officer to personnel officer or budget officer to budget officer. It is in these specialist areas where our activities are often similar and where library and information science can benefit most from being knowledgeable about research being conducted in public administration.

Research Themes

There is a convergence among several of the social sciences in interests, in research materials, and to a large extent in value orientation. People have fundamental similarities, and findings in one area concerning motivation, group dynamics, learning, etc. are the same or similar regardless of whether the research is done in public administration, library and information science, or related disciplines. There is often too little communication between and among disciplines in their research and in the dissemination of that research. The overlapping and often vague boundaries that separate disciplines provide the opportunity and indeed indicate a need for outward communication.

Research themes in public administration tend to follow practice rather than determine it. Much research is evaluative rather than basic. This is important for the improvement of operations but does not break new ground.[4] One major thrust over the past decade has been the emphasis on behavioral research, from the review of personnel structures to a concern for motivation and analysis of leadership potential. Another has been in the area of policy analysis. Some general areas of research cover several aspects of public administration while others are specific to a process. Those that are more general in nature will be reviewed in this article followed by those that are specific to a particular aspect of public administration. Finally, an analysis of the doctoral dissertations completed in the past six years will provide an indication of the attention given by researchers to the various aspects of public administration. Each of the areas of research have aspects that are easily applied to the management of libraries and information centers and to their clienteles.

Innovation

Among the more comprehensive studies in the field are those dealing with innovation. The National Science Foundation, Division of Policy Research and Analysis funded a study of the life histories of six types of innovation. Nineteen locations where innovative activities (such as Computer-Assisted Instruction) were being carried out made up the sample. "Old innovations" were identified so that their life cycle could be studied. This long-term investigation of organizational events was necessary to determine the steps needed for an innovation to become routinized. Researchers found that for an innovation to become a routine, it passes through a series of cycles; improvisation, expansion, disappearance, success, and then full routinization. They found that an innovation must gain increased support from agency practitioners and does so only if it makes their work easier.[5]

Organizational Development and Change

Recent studies of organizational development and change have dealt with three themes: kinds of change, adaptation to change and organization of change. Five kinds of change have been identified: planned change, confluence of forces, event-dominated change, accidental innovation, and external intervention.[6] Those studying adaptation to change have investigated the change process from a number of views: (1) the external conditions which influence change—such as the

introduction of technology; (2) the behavioral aspects of change; and (3) the organizational or structural aspects of change. These factors are intertwined and although one may be the focus of the study, the others will, to some extent, be included. Study of technological change includes the design and evaluation of MIS (Management Information Systems), the behavioral aspects of learning to use the new technology and the restructuring of the organization to accommodate new ways of obtaining information and completing tasks. Study of the behavioral aspects of change includes examination of the planning, implementation and evaluation of activities intended to increase efficiency and productivity. It also includes analysis of the impact on the organization of group decision-making as a means of bringing about change.

Much of the research dealing with change strategy is oriented toward studying group activities and ways to structure groups that will result in improved performance. One form of organizational development is the interdisciplinary approach to problem solving—sometimes called the study team approach. As an example, library services could be reviewed from a number of vantage points. A committee or interagency task force representing recreation, the planning department, personnel, the budget office, and other relevant departments would review the entire library/information program and its present and potential contributions to the community rather than looking at it as a separate, perhaps isolated, entity. This program approach to governmental issues was tried in Dayton, Ohio and was found to have numerous benefits. It is analogous to program budgeting in which a program-oriented rather than a line-item oriented approach is taken. This program-oriented approach provides new lines of communication among agencies and has the potential of changing the way in which organizations function.[7]

Another organizational design, the matrix organization, differs somewhat from the study team. In the matrix organization, each person belongs to two working groups, thus assuring integration of activity and continuous communication. The study team, an ad hoc group, is assigned a specific task. Integration and communication of activities are expected but are not built into the plan, as is the case with the matrix organization. The matrix structure, developed in the 1960s as part of the space effort, draws staff from throughout the organization to meet a specific need. In New York City during a sanitation strike, a matrix-structured crisis team of members from the finance, fire, police, general services, and sanitation departments was set up. This technique—analogous to program budgeting in the financial area—has been used

in the private sector with considerable success, and further possibilities for its use in the public sector are being explored.[8]

At the level of the individual in the organization, research on the role of the manager in dealing with change has focused on educating the manager, on the effects of self-renewal on the individual, and on the ways in which the manager can work with the organization to effect its renewal. The role of the consultant as change agent has received attention as well.

Decision-Making and Decision Evaluation

Studies of decision-making have gained in popularity and tend to focus on the question of how can we do the job better (productivity). How can services be provided at high quality and at the lowest possible cost? How do we determine the actual cost of programs? What are the program alternatives? What long-term changes result from the application of certain policies, programs and measures?

The use of productivity measures to aid in decision-making is of considerable interest to researchers, and the federal government has been heavily involved in productivity measurement. Relatively few federal and state governments are satisfied with the productivity measures they have been using and are looking at new ways of measuring input-output ratios. In the 1950s, a popular measure was to relate the amount of work accomplished to number of employee hours or dollars expended. After a period of being out of favor, this measure is again being used.[9] In the case of library services, the federal productivity measure was items loaned. This is only one measure and is generally recognized to be inadequate. It illustrates why there is a need to look at what output measures are selected and what quality and levels-of-service measures are chosen. One means of dealing with the problem is to set work standards and then measure activity against them.

Studies of productivity have ranged from the identification and application of measures, to the behavioral aspects of data collection, to the decision-making processes that are or may be dependent upon the results of applying the measure. Data collection in public service activities is often difficult, largely because it is not always possible to anticipate the workload. One can more easily set input measures for entering records into OCLC—as there is some control over workload—than is possible for measuring patron requests at the public service desk—where there is little or no control over the workload. Because some areas of activity are easier to measure, they tend to receive the most attention, leaving large numbers of less-easily measured activities unmeasured or

poorly measured. In collecting productivity data, problems arise because of the lack of comparative data among departments and between governments. There is often little comparative data over time even in the same department. This same difficulty exists among public libraries in their statistics keeping. As agencies—including libraries—are increasingly expected to justify costs, the need for interagency comparable input-output data continues to grow.

Personnel

The scientific management studies and attitudes toward work that shaped the individual to meet the job demands gave way to a human relations approach in the 1930s. There now appears to be a third level of job design thinking that combines both the demands of the job and the interests of the individual with the technology of the 1970s and 1980s to become socio-technical job design and organization. Although preliminary studies have been conducted—largely in other disciplines—much work still needs to be done in order to understand the impact of automation and computer technology—as well as other advanced technologies—on the work place. The requirement that some tasks be done for long periods with the computer terminal has elements of Taylor's scientific management approach. The emphasis on inputting so many units within a time period is reminiscent of Gilbreth's time-and-motion studies, while job redesign to take human needs into account is more reflective of the 1930s. Add to these concerns the studies of job redesign to meet the social concerns of the 1960s with the emphasis on job enrichment, employee satisfaction and feedback mechanisms. The most recent layer is redesign of the job to meet the demands of technology. This is an area of particular interest to those responsible for the management of libraries and other information activities. The introduction of automated systems has changed the structure of activities within the library. It has changed the activities of individuals and groups. Designing jobs by considering the needs of the individual and the organization without regressing to the assembly line mentality of Taylor is an important area of research to those in public administration and in librarianship.

Other areas of concern in personnel research are related to community concerns and socio-political developments. Pressure from minority groups and women has led to evaluation of jobs in terms of comparability of worth among jobs. Minimum qualifications for positions and the needs to justify them are concerns of numerous public

agencies. Fairness in labor-management relations generally and in relation to affirmative action directives has also focused greater attention on job design and evaluation. Ethical conduct codes are being reviewed. Many of these changes have come about because of the influx of women into the labor force and their demands for fair treatment.

Librarianship has traditionally been a female dominated profession, and many traditional difficulties such as low compensation rates have been present for many years. Unlike many areas of public administration, which have been male dominated and have fairly small and relatively recent female populations, librarianship has a depressed personnel history in many respects. The study of librarianship in relation to other similar service professions such as public administration is an interesting area that would produce data on comparable worth of jobs. With the age of information upon us and with the changes in needs for information by individuals in all areas, the study of jobs, of comparability of worth in relation to information services would be of particular interest. Studies of leadership asking such questions as: What is a leader? What makes a good leader? and studies of participation in the organization, are also of current interest in public administration research.

Financial Concerns

An area of public administration where research was extensive at one time but limited at present is in the area of budgeting of resources. During the period of program budgeting, performance budgeting and zero base budgeting, considerable attention was paid to the impact of these on planning of service. Recent research has been more apt to focus on the effects of these different types of budgeting on the organization's performance. The ways in which funds are spent, and what one receives in return have been reviewed at some length. One of the few new ideas in the financial area has been that of contracting for services. Public agencies have sold their parking lots and then rented them back; they have reduced their staff size and have hired special purpose consultants—the objectives being to reduce the cost of maintaining certain services or full-time positions when the services or personnel are needed only part time.[10] This is an activity full of potential (in savings) and pitfalls (with public service unions and other employee groups). It brings into question issues of relationships between the public and private sector that need further research. Much of the rest of the research in the financial area has been a recording of the impact of resource

scarcity on public finance and an investigation of possible new means of acquiring financing.

Marketing Approach to Service

The tying of market research to public agency services is beginning to receive attention. Agencies are looking at the services they provide with a view to what the demand is or may be and they are looking at the extent to which services are provided in ways most preferred by the clientele.

Looking at public services from a marketing standpoint has brought citizens into the activities of public agencies in a new way. Studies of citizen participation in decision-making have been conducted for some time, with emphasis on the role of citizen groups in influencing both policy and its implementation. Characteristics of individual participants or of the group have been studied. Client groups, their level of satisfaction, and the dynamics of their interaction with agency personnel have also been observed. In the marketing mode these studies serve as a base, but there is a new emphasis on designing services to meet client wishes rather than waiting for complaints as a means of adjusting existing services. Measures of public service which include an evaluation of citizen satisfaction are being developed. A measure of satisfaction for police service was developed based on reported data and interviews; and the measure included variables that determine levels of satisfaction with services of the police department.[11]

This marketing approach was based on the assumption that local government officials must strike a balance between citizen demands and the city's or state's ability to pay. If the citizen wants a higher level of service than there is money to support, one answer is to involve the citizen in the activity through volunteer work, through coproduction of services, which involves both a paid employee and a volunteer, or through the self-service concept in which the clients do their own paperwork.

Dissertations in Public Administration

Research patterns in public administration in the past several years reinforce statements made earlier in this discussion. Of the approximately one hundred dissertations annually dealing with public administration in the United States, the following patterns emerge.

In 1977, one-third of the 115 dissertations dealt in some way with personnel issues, while less than 10 percent were related to financial issues or to policy implementation. Most of the remaining dissertations were descriptions of particular programs in legal, health care, or environmental services. A few dealt with interagency cooperation and communications. Two dissertations, one on the confidentiality of data and another on the impact of computers on government, were related to information. The dissertations in the area of personnel focused on the role of the individual and on the design of organizations to meet human needs.

Research production in dissertations in 1978-79 followed a similar pattern with approximately one hundred dissertations per year, with personnel as the largest study area. Approximately 10 percent were related to financial issues or to policy implementation. The largest group of dissertations described programs, particularly in law and health and human services. A few studies of planning, evaluation and organizational development were done. Leadership, managerial styles and evaluation were common topics to personnel related study. The role of external interest groups in relation to public policy and public service was investigated as well. In 1980, 1981 and 1982 the pattern continues to hold with approximately one-third of the dissertations dealing with personnel concerns and less than 10 percent concerned with financial activities. The dissertation research production in public administration is heavily descriptive of programs and activities. The second emphasis is on personnel. Relatively little attention is devoted to financial considerations, or to organizational theory or to planning. Few studies of principles were conducted. No more than one or two dissertations in any one year focused on the impact of information and/or technology on public administration.

The major contribution of dissertation research in public administration to library and information science is in some of the personnel studies, the occasional study of information and technology in the public sector and the generalizable studies of innovation and change. Public administration is an applied social science and this is most evident as one reviews its dissertation research.

Future Research

In the past, research in public administration was conducted in an environment of growth and of abundance of resources. Future public services will be managed in an environment of steady or reduced resour-

ces. The infrastructure of roads, housing and public buildings is aging and needs repair. The infrastructure of communication is being altered radically and the telephone and mail services are being expanded and deregulated. The population is changing as the average age rises, and in response, public agencies will institute new or at least revised services. The effects of these changes on providing services and on demands for services are areas filled with research questions.

Knowledge is emerging as the critical factor in the way in which we do our work. New techniques of dealing with information have changed the power balance between those who have and those who do not have information. Availability of necessary information at the right time is critical to levels of productivity. In the past six years, no more than one or two dissertations focused on the impact of information and/or technology in public administration. While the shape of our knowledge base is changing, researchers have been studying the impact of specific programs. Both are important, but of prime importance is research on the changes in access to information and the uses of information in our information society.

Public and private sector activities were at one time fairly easy to define. That is less the case and the division between the two is becoming increasingly difficult to determine. The library as a public good is coming under scrutiny. Services provided by federal and state governments are now being claimed by private sector entrepreneurs who wish to sell the information at a cost much higher than it is being provided by public agencies. Many public agencies are looking at the possibility of contracting for service, and this continues to blur the difference between public and private sectors.

Research in innovation and change is necessary and will doubtless continue at least at a minimal level. There will continue to be a great deal of public administration research devoted to personnel issues, much of which will have useful implications for library and information science. In order to gain maximum benefit from such research, it needs to be communicated across disciplines. Those responsible for the management of libraries need to be aware of research in public administration and the ways in which its findings can be applied to research and practice in its own field.

References

1. Waldo, Dwight. "Public Administration." In *International Encyclopedia of the Social Sciences,* pp. 145-55. New York: MacMillan, 1968.

2. Lane, Frederick S., ed. *Current Issues in Public Administration,* 2d ed. New York: St. Martin's Press, 1982, p. 5.

3. Allison, Graham T., Jr. "Public and Private Management: Are They Alike in All Important Respects?" In *Current Issues in Public Administration,* 2d ed., p. 17.

4. Frederickson, H. George, and Wise, Charles R. *Public Administration and Public Policy.* Lexington, Mass.: D.C. Heath, 1977, p. 13.

5. Yin, Robert K. "Life Histories of Innovations: How New Practices Become Routinized." *Public Administration Review* 41(Jan.-Feb. 1981):21-28.

6. Costello, Timothy. "The Change Process in Municipal Government." In *Emerging Patterns in Urban Administration,* chap. 1, edited by F. Gerald Brown and Thomas P. Murphy, pp. 13-32. Lexington, Mass.: D.C. Heath, 1970.

7. Eddy, William B. "Organizational Development and Change." In *Current Issues in Public Administration,* 1st ed., edited by Frederick S. Lane, p. 266. Lexington, Mass.: D.C. Heath, 1970.

8. Littlejohn, Robert F. *Crisis Management, A Team Approach* (AMA Management Briefing). New York: American Management Association, 1983, p. 21.

9. Hatry, Harry P. "The Status of Productivity Measures in the Public Sector." In *Current Issues in Public Administration,* 2d ed., p. 433.

10. Straussman, Jeffrey D. "More Bang for Fewer Bucks? or, How Local Governments can Rediscover the Potentials (and Pitfalls) of the Market." *Public Administration Review* (special issue) 41(Jan. 1981):150-58.

11. For several examples of client satisfaction with the effectiveness of local government services, see "How Effective are Your Community Services: Procedures for Monitoring the Effectiveness of Municipal Services" Washington, D.C.: The Urban Institute and International City Managers Assn, 1977.

This Page Intentionally Left Blank

Operations Research

EDWARD T. O'NEILL

LIKE ANY OTHER organization, a library requires competent management. As Morse[1] points out: "Whether or not it ever were so run, the modern library certainly cannot now be operated as though it were a passive repository for printed material." Libraries have become complex systems requiring sophisticated management. Operations research is an important management tool which can aid the library manager in effectively using all available resources. It is also a set of analytical tools which can enable researchers to better understand library and information service.

Early History

Prior to World War II, it was generally accepted that only the generals could contribute to an understanding of military operations. However, operations of far greater size and complexity were introduced in World War II. Interdisciplinary groups of mathematicians, statisticians, psychologists, physicists, and other scientists were formed to solve both strategic and tactical problems. These groups addressed varied topics, including the use of airpower, the estimation of convoy size and movement, and the use of radar.

After World War II, operations research was adopted by industry. A group of Air Force analysts, known as the "whiz kids," moved as a unit to the Ford Motor Company. Members of the group, which included

Edward T. O'Neill is Senior Research Scientist, Office of Research, OCLC Online Computer Library Center, Dublin, Ohio.

Robert McNamara, rose first to important positions in Ford and, later, to other powerful positions in both industry and government. The initial applications of operations research to industry were extensions of those applied to the military, and the results in the private sector were mixed. There were enough successes, however, to draw attention to the field. By the mid-1950s, operations research had received considerable publicity, and it soon became a familiar phrase in the vocabulary of management.

During the 1960s, operations research was integrated into academic work, generally as part of a program in industrial engineering or management. In many respects, operations research was similar to "scientific management," which had earlier been pioneered by Frederick Taylor, Frank and Lillian Gilbreth, and others. Since scientific management was a major component of industrial engineering programs, they were natural academic homes for operations research. Management schools also were quick to incorporate operations research into their curriculums, where it is frequently referred to today as management science.

Definition

Despite its popularity, operations research lacks a satisfactory definition. Leimkuhler[2] points out that most operations research practitioners prefer the simple truism, "operations research is what operations researchers do." Caywood,[3] in a special volume of *Operations Research,* defined operations research as "an experimental and applied science devoted to observing, understanding, and predicting the behavior of purposeful man-machine systems; and operations-research workers are actively engaged in applying this knowledge to practical problems in business, government, and society." More recently, Gass[4] in a feature article in the same journal defined operations research simply as "the science of decision-making."

No definition seems to describe adequately operations research. What distinguishes it from other related disciplines is not a single unique attribute, but rather the approach that operations research takes to problem solving. However, operations research cannot claim credit for the characteristic systems approach, since it was used long before anyone had ever heard of operations research. Operations research, however, combined the systems approach with solution methodologies to form a new discipline.

Many names are synonymous with operations research. The British prefer the term "operational research." "Management science" is a common term used to describe the study of operations research within business schools. "Systems analysis," "operations management," "quantitative methods," and "operations analysis" are also commonly used to describe operations research. "Systems analysis" is also used to describe the study of a system with the objective of computerizing the process. The two uses of the phrase create considerable confusion.

Since there is no generally accepted definition of operations research, it should not be surprising that library operations research lacks an acceptable definition. As Leimkuhler[5] explains:

> It is difficult to present a unified picture of operations research. Even in the schools where it is taught in a formal way, it is usually offered as a subordinate area of study within some better known field. In practical applications it is often included as an added dimension to a more urgent and specific objective. Thus, operations research is developing today through the collective efforts of many different special interest groups. One part of the melange is library operations research, which includes contributions coming from many different disciplines. The participants include librarians, information scientists, philosophers, mathematicians, engineers, and computer scientists, and many others.

Models

At the heart of operations research methodology is the model. A model is an abstraction, a thought framework for analysis of a system. Operations research uses mathematical models to describe, represent, and imitate aspects of a system's behavior. Mathematical models, which are highly abstract representations, often give librarians the feeling that these models are quite remote and alien. To the contrary, they are really nothing more than an advanced variation of the so-called "word problems" from high school or college algebra courses.

As an illustration of an operations research model, consider the classic newsboy problem. Assume that a newsboy who sells papers on a street corner must decide in advance the number of papers he wants for a particular day. The number of papers he can sell each day is a normally distributed random variable with a mean of ten and a standard deviation of three. Each paper costs him ten cents and sells for twenty-five cents. The newsboy must absorb as a loss any papers not sold at the end of the day. How many papers should he purchase?

To find the best or optimal solution requires a simple mathematical model. For this problem, there are only a limited number of solutions which require serious consideration. Since he normally can sell ten papers per day, it is safe to assume that he should buy at least six papers and no more than fifteen. Therefore, only ten alternative solutions need to be considered. The proability that he will sell papers on any given day is found by using tables of the normal distribution, which are included in most basic statistics books. Once the probabilities are known, the expected or average profit can be computed assuming that he buys six, seven,..., or fifteen papers.

When the results are examined, we find that, to maximize his profit, the newsboy should purchase eleven papers, the sale of which will result in an average profit of $1.21 per day. Purchasing any other number of papers will result in a lower profit. When he buys eleven papers, 42 percent of the time he will sell all his papers and, on the average, he will have less than two unsold papers per day.

The newsboy problem is a classic example of an operations research problem, and variations of it can be found in many texts. The objective is clear—the newsboy wants to make as much money as possible. If he buys too many papers, he will end up paying for papers he cannot sell. However, if he buys too few papers, he will restrict his sales. Although most practical operations research applications are much more complex, the solution to the newsboy problem illustrates the problem-solving approach.

An intuitive approach was adequate to solve the newsboy problem. For most complex problems, a more structured approach is usually required. Most operations researchers follow a similar approach in applying operations research. While there are many variations, the following procedure given by Churchman, Ackoff, and Arnoff,[6] is still widely accepted:

1. Formulating the problem.
2. Constructing a mathematical model to represent the system under study.
3. Deriving a solution from the model.
4. Testing the model and the solution derived from it.
5. Establishing controls over the solution.
6. Putting the solution to work: implementation.

These steps vary in complexity from problem to problem. In some applications the formulation may be very difficult; in others, the model construction may be the most complex step.

Formulating the problem usually is one of the more difficult steps for library operations. This step requires that the objective be stated in measurable terms, defining the system and identifying any constraints. While operations researchers can assist, formulating the problem is primarily the responsibility of the librarian.

The construction of the mathematical model and the derivation of its solution are the areas in which the operations researcher is most competent. A large portion of operations research education is devoted to these steps. A variety of general models, such inventory, queueing, linear programming, simulation, networking, and scheduling, have been used extensively. An extensive literature covering both theory and practice exists for these models. Unless the librarian has had some training in operations research, the model construction and solution should be performed by a competent operations research practitioner for all but the simplest models.

Testing the model and its solution require close cooperation between the librarian and the operations research practitioner. A model is never more than a representation of reality. If the model can accurately predict the behavior of the essential aspects of the system, it is a good model. Although there are a variety of technical methods for testing, the librarian's intuition can be valuable. Results which do not "feel right" should be carefully reexamined before they are accepted.

Controls over the solution need to be established. Any solution is valid only as long as there are no significant changes. When conditions change, the solution must be reevaluated. In the newsboy problem, for example, if the price of papers is changed, buying eleven papers may no longer be the best strategy.

The final step in the process is the implementation of the results. If major changes are required, this can be a difficult step, one that may be met with some resistance. It is important that everyone involved in the project—including the librarians, the operations researchers, and the library management—participate in the implementation. As Churchman, Ackoff, and Arnoff[7] point out: "The steps enumerated are seldom if ever conducted in the order presented. Furthermore the steps may take place simultaneously. In many projects, for example, the formulation of the problem is not completed until the project itself is virtually completed. There is usually a continuous interplay between these steps during the research."

Operations research has developed its own vocabulary, which frequently becomes a communications barrier. A recent issue of *Operations Research* included articles entitled "Stackelberg-Nash-Courtnot

Equilibria: Characterizations and Computations," "Implementation and Testing of a Primal-Dual Algorithm for the Assignment Problem," and "Diffusion Approximation for M/G/m Queue." Those who make it beyond the titles will need an extensive mathematical background if they are to understand the articles. The librarian who ventured into the journal literature of operations research has rarely been rewarded. A large portion of the applied operations research is published in the literature of the field to which it was applied. The monographic literature is generally easier for a typical librarian to understand and contains many texts on operations research which require little or no mathematical background. No attempt will be made to review this literature, since it is readily available from most large research libraries under the subject heading **Operations research.** The rest of this article will analyze significant developments in the application of operations research to library and information service.

Applications

Interest in the application of operations research methods to libraries started in the early 1960s. In the United States, this early work was done primarily by operations researchers with little or no previous library experience. Philip M. Morse at the Massachusetts Institute of Technology, Ferdinand F. Leimkuhler at Purdue University, and Richard W. Trueswell at the University of Massachusetts started applying operations research to libraries. Morse was one of the early leaders in operations research and the first to develop a sustained interest in libraries. He used the library as a convenient laboratory for student projects in the operations research program. Leimkuhler and Trueswell were both teaching operations research in departments of industrial engineering. Later, major operations research programs were also developed in Great Britain by B.C. Brookes at the University College and Michael K. Buckland at the University of Lancaster. The National Science Foundation supported much of the early work in the United States and was the major factor in influencing operations researchers to address the problems of libraries. By the late 1960s, the application of operations research spread to several other academic institutions.

The work done by the Leimkuhler group at Purdue was probably the most significant, both in terms of impact, size and duration. The Industrial Engineering School at Purdue had a good working relationship with the Purdue University Libraries. As J.H. Moriarty,[8] former

library director, pointed out, "Industrial Engineering students have done class projects in the Libraries since 1945, usually for motion and time study, sometimes for layout."

The early efforts focused on traditional areas of library operations, particularly those that required a minimum understanding of library science. The work at Purdue began in 1962 with an internally funded operations research study of the university's libraries. Later, the work received funding from the National Science Foundation. An important feature of the Purdue work was the extensive involvement of the librarians. Leimkuhler and Baker[9] stated that:

> During the spring semester of 1963, a weekly library research seminar was initiated for the purposes of making a group study of the operations and organization of the University's libraries, identifying areas of research interest, and discussing applicable research methods and techniques. The seminars have been a unique and continuing feature of the program. Over a period of two and a half years, they have become a university-wide forum for exploring library problems and have contributed enormously to the excellent cooperation between the library staff and outside researchers.

The seminars got off to a very slow start, and it was only through the persistence of Leimkuhler and Moriarty that they eventually became productive. The early seminars could be described as meetings in which engineers talked to engineers with librarians in attendance. Eventually, as the librarians realized that the engineers were naive about library science and as the engineers learned to use English whenever possible, the communications barrier started to come down. These seminars became productive forums where ideas could be tested, discussed and evaluated.

The first major area investigated was storage models. Leimkuhler and Cox[10] developed a model to minimize the amount of shelving required for a given collection. The model, which assumes that books will be shelved by size, can be used to compute the optimum spacing between shelves. While the model was a significant contribution to compact storage of library collections, it was similar to more general inventory models. Furthermore, the formulation of the model required only a limited understanding of libraries.

The focus of the research soon expanded into the more central areas of library operations with Leimkuhler's[11] development of the Bradford distribution. The Bradford distribution is a model of information-seeking patterns. It predicts how the demand for materials will be distributed over a library collection. When interest shifted to the Brad-

ford distribution, operations research moved into collection development, a central area of librarianship.

The activities at Purdue continued to expand in the late 1960s, eventually touching on almost all aspects of library operations. The scope of the research activity ranged from course projects to doctoral dissertations. Leimkuhler[12] identified a dozen operations research theses completed at Purdue by 1971 which related to libraries. In the early 1970s, the funding for operations research decreased, and the level of research activity began to slow.

Activities at other institutions followed the general pattern observed at Purdue. Starting in the early 1960s, there was a decade full of library activity. By the end of the period, most aspects of library operations had been investigated, at least superficially. Buckland[13] provides an excellent review of the progress made during this period. The sheer volume of the work is impressive; Buckland and Kraft[14] identified almost 800 publications relating to the application of operations research methodology to libraries.

The study of library operations research started changing in the early 1970s. By 1975, most of the research activity had shifted from operations research units to libraries or library schools. This shift was assisted by the publication of highly readable books by Buckland;[15] Brophy, Buckland, and Hindle;[16] and Chen.[17] Courses in operations research became part of many library schools' curriculums. Bosler[18] found that seventy-nine different courses in quantitative methods were being offered at sixty-seven ALA-accredited library schools. Approximately 45 percent of these courses dealt with either the techniques or the applications of operations research. To a large extent, operations research had moved to "libraryland," and, in the process, it had lost some of its distinctiveness by being closely associated with other quantitative methods.

Recalling that one popular definition of operations research is "what operations researchers do," it is easy to extend that definition to define library operations research as, "the study of libraries by practitioners of operations research." As librarians and information scientists started applying operations research methodology, it became more difficult to distinguish operations research studies from other quantitative library research.

By the mid-1970s, bibliometrics became an accepted term to describe quantitative research on libraries. Pritchard[19] originally defined bibliometrics as, "the application of mathematics and statistical methods to books and other media of communication." Fairthorne[20]

used bibliometrics to denote "quantitative treatment of the properties of recorded discourse and behaviour appertaining to it." Much of the research which would have been called operations research in the 1960s was called bibliometrics by the late 1970s. Bibliometrics is not, however, just a new name for library operations research. It also encompasses a wide variety of other quantitative methods—including probability and statistics, information retrieval, citation analysis, and computing—forming a new subdiscipline that is more than just a sum of its parts. Hjerppe[21] identified over 2000 publications relating to bibliometrics. A large number of these are applications of operations research, and many more are closely related to operations research, either by methodology or philosophy.

Impact

Over twenty years have passed since the first applications of operations research to libraries. The results are impressive in terms of both the number of studies performed and the quality of the research. Have these studies changed the way we understand libraries and the way these institutions are operated? The answer seems to be a qualified "yes." Library operation has been affected, but not dramatically.

It is difficult to find a library that has been significantly affected by operations research. Collection management—including obsolescence, scattering and availability—has been the focus of much of the research. Yet, few libraries today have adopted the operations-research-based collection management techniques. One can find examples where operations research was successfully applied to a limited aspect of the library system. The shelving models have been successfully used, for example, to estimate shelving requirements. Estimates of shelving requirements, however, were made previously. While operations research may have improved the accuracy of the estimates, it certainly does not constitute a major change.

The most positive interpretation of the slow acceptance is that operations research has been assimilated into library science through bibliometrics. Operations research has had a major impact on library education. Bosler's[22] study indicated that over half of the accredited library schools offered at least one course on operations research methods and many others included it as a major part of a more general course on qualitative methods. It appears that most library students are at least being exposed to operations research, and many are receiving a good background in operations research methodology. The full impact

of the research done in the 1960s may not be realized until students with a knowledge of operations research rise to senior library management positions and use operations research to help make decisions.

The past decade has been a period of restricted budgets for most libraries. Few libraries could afford to apply operations research. It is generally assumed that to successfully apply operations research, a library needs either to hire someone familiar with operations research or to make extensive use of consultants. In the 1970s, many libraries viewed automation as the most important new area for development and some may have viewed their automation efforts as a substitute for operations research. Leimkuhler[23] also raises the question of scale. Generally, the savings resulting from an operations research study is proportional to the size of the library, while the cost of the study varies little. This would seem to limit the libraries that potentially could benefit from undertaking operations research projects to the larger libraries or groups of libraries.

There may be an even more fundamental reason for the lack of widespread application. Operations research has developed sound methods for building, solving and testing complex models. It is an effective methodology for determining *how* to do something; however, operations research cannot determine *what* should be done. Buckland[24] provides the following illustration:

> A library serves a variety of different groups with different values, with different behavior patterns, and expressing different needs. A chemist urgently needs to know the thermo-physical properties of a compound; a historian is enquiring after an obscure document—whose name has been forgotten and which may not, in fact, exist; a bedridden senior citizen may be lonely, bored, and wanting a novel; a disadvantaged citizen wants to know who to contact about food stamps; a student is sitting in a library carrel with a book. It may not be a library book. The student is asleep.

Buckland raises the question of how operations research can deal with these diverse demands for library service. There is no accepted means, either in library science or operations research, to determine the relative importance of these needs. Yet, Buckland continues, "library administrators are continuously making decisions based on assumptions, explicit or implicit, on precisely these matters."[25]

There are many ways to measure the service provided by libraries. There is the quality of the service, the quantity of the service and the value of the service. There is not, however, an accepted way to estimate value. Should the value be based on how much good the service does?

Should it be based on the market value; that is, how much someone is willing to pay for it? Most successful applications of operations research have involved systems where there was broad acceptance of the objective of the system and suitable measures to evaluate the outcome. In business applications, the objectives are usually straightforward. Frequently, as in the newsboy problem, the objective is as simple as maximizing the profit. It should not be surprising that, if there is not agreement on the objective, there will not be agreement on the solution.

Conclusions

The application of operations research to libraries has been similar to the applications of operations research to social services. The theoretical work done in the past twenty years has been very significant and has led to a better understanding of both libraries and library users. Operations research has become an established part of library science education. And, while the impact on library operations has been significant, it has been less than most of us had hoped.

References

1. Morse, Philip M. *Library Effectiveness: A Systems Approach.* Cambridge, Mass.: MIT Press, 1968, p. 1.

2. Leimkuhler, Ferdinand F. "Operations Research: Applications to Library Management." In *Library Research Round Table: 1977 Research Forums Proceedings,* edited by Charles C. Curran, p. 114, fn. 1. Ann Arbor, Mich.: University Microfilms, 1979.

3. Caywood, T.E., ed. "Guidelines for the Practice of Operations Research." *Operations Research* 19(Sept. 1971):1138.

4. Gass, Saul I. "Decision-Aiding Models: Validation, Assessment, and Related Issues for Policy Analysis." *Operations Research* 31(July-Aug. 1983):603-31.

5. Leimkuhler, "Operations Research," p. 120.

6. Churchman, C. West, et al. *Introduction to Operations Research.* New York: Wiley, 1957, p. 13.

7. Ibid., p. 15.

8. Moriarty, J. H. "Library Design and Operations Study" (proposal letter by Ferdinand F. Leimkuhler and Norman R. Baker to the National Science Foundation, 14 Dec. 1965) (unpublished).

9. Leimkuhler, Ferdinand F., and Baker, Norman R. "Library Design and Operations Study" (Proposal to the National Science Foundation, Dec. 1965, unpublished).

10. Leimkuhler, Ferdinand F., and Cox, J. Grady. "Compact Book Storage in Libraries." *Operations Research* 12(May-June 1964):419-27.

11. Leimkuhler, Ferdinand F. "The Bradford Distribution." *Journal of Documentation* 23(Sept. 1967):197-207.

12. _____. "Library Operations Research: A Process of Discovery and Justification." In *Operations Research: Implications for Libraries,* edited by Don R. Swanson and Abraham Bookstein, pp. 84-96. Chicago: University of Chicago Press, 1972.

13. Buckland, Michael K. "Ten Years' Progress in Quantitative Research on Libraries." *Socio-economic Planning Sciences* 12(no. 6, 1978):333-39.

14. Buckland, Michael K., and Kraft, Donald H. "A Bibliography on Operations Research in Libraries." In *Reader in Operations Research for Libraries,* edited by Peter Brophy, et al., pp. 355-92. Englewood, Colo.: Information Handling Services, 1976.

15. Buckland, Michael K. *Book Availability and the Library User.* New York: Pergamon Press, 1975.

16. Brophy, Peter, et al., eds. *Reader in Operations Research for Libraries.* Englewood, Colo.: Information Handling Services, 1976.

17. Chen, Ching-chih. *Applications of Operations Research Models to Libraries: A Case Study of the Use of Monographs in the Francis A. Countway Library of Medicine, Harvard University.* Cambridge, Mass.: MIT Press, 1976.

18. Bosler, Lisa. "A Study of Information Science Curricula in ALA-accredited Library Schools." Master's thesis, State University of New York at Buffalo, 1980, p. 15.

19. Pritchard, A. "Statistical Bibliography or Bibliometrics?" *Journal of Documentation* 25(Dec. 1969):349.

20. Fairthorne, Robert A. "Empirical Hyperbolic Distributions (Bradford-Zipf-Mandelbrot) for Bibliometric Description and Prediction." *Journal of Documentation* 25(Dec. 1969):319.

21. Hjerppe, Roland. *A Bibliography of Bibliometrics and Citation Indexing & Analysis.* Stockholm, Sweden: The Royal Institute of Technology Library, 1980.

22. Bosler, "A Study of Information Science Curricula."

23. Leimkuhler, "Library Operations Research," p. 91.

24. Buckland, "Ten Years Progress," p. 337.

25. Ibid.

Will the Cycle Be Unbroken? Research and Schools of Library and Information Studies

THOMAS CHILDERS

Introduction

"UNTIL WE CAN STATE universal generalizations or laws, based on evidence and confirmable by further observations, librarianship will remain an art or a field of practice and will not be a science or a discipline."[1] This statement and numerous others in the literature related to library research carry the assumption that librarianship would be a "science" or a "discipline" if members of the profession and its institutions would devote appropriate priority and energy toward research. One of those professing an alternate view—namely, that librarianship is by nature more art and practice than science—is Howard White.[2] He likens the field to journalism, publishing, law, politics, business, teaching, theater, and sports—fields that do not require a base of science in order to be practiced, but that provide the objects for research and that engage in self-study in order to improve practice. The cry for basic research in librarianship cannot be heard, he argues, perhaps because it is not there. Even Shera, one of the major proponents of research in librarianship, grants that, "research, important as it is, is not the be-all and end-all of life, or even of professional life; and every librarian does not have to be a 'researcher' in order to prove the vitality of the profession."[3]

The most balanced assumption, given the evidence so far, is that research on library matters will at best help build a more solid base for

Thomas Childers is Professor and Director, Center for Information Research, College of Information Studies, Drexel University, Philadelphia, Pennsylvania.

the practice of what will forever remain an art. The art will be improved, not supplanted, by science, no matter how passionately the field might embrace research; and the art will remain the dominant force in the field, not because the artisans will win a political victory over the researchers, but because the field is and will continue to be essentially the practice of an art. In the face of a literature that seems universally to call for research in the scientific mode and that often envisions the transformation of the field from an art to a science, one cannot overlook the actual relationship of art to science. That relationship is one of dynamic tension. It is inherent to the field and is not simply the result of political, economic, or personality struggles among the human proponents of art and science. The dynamic tension should be recognized as natural, as well as man-made, and a consideration of the role of library and information science schools in research must acknowledge both aspects of that tension, for the two have undoubtedly helped shape the role and effectiveness of library schools in research. Nevertheless, it is inconceivable that maximizing the quality, the amount and even the impact of the schools' research activities would change the field from an art to a science. The best to be hoped for is that the field would be transformed into an art vigorously supported by science.

Library Schools as Producers of Research

A base of theoretical knowledge is commonly deemed a requirement of a true profession, and advancement of that knowledge is deemed a requirement of the academic units that serve that profession. At the same time, the field of practice requires the preparation of individuals for entry into a specific occupation and one that is institutionalized. Thus, training in the specific arts of librarianship—as opposed to educating in the broader knowledge of the field—is required to produce a graduate who can be useful, practically, on or shortly after the first day on the first job. As well, the library school is expected to educate in the broader knowledge of the field so that its graduates also have the conceptual bases and scope needed for growth in the field. Finally, service to the profession and to the academic unit is generally considered a standard role of a library school.

Research, training, education, and service are all required for the "success" of a professional school in an academic environment. Yet even within the academic environment there is inherent conflict among the four elements. The tension between art and science in the library field is manifested more specifically in the tensions between training

(practice) and education (knowledge), service (practice) and research (knowledge). More time for one is less time for another, and decisions of individual faculty members reflect their priorities for one or the other of the four activities.

Much of the writing on library research and library education has concentrated on the United States or on North America. Over the years, numerous writers have asserted the need for more research activity in library schools, claiming that it helps build a knowledge base for the advancement of the field, for sound application, for acceptance of the schools themselves within the larger academic institution, and for securing librarianship's place as a legitimate profession.[4] Other writers assert that practicing libraries need to (1) engage in more research, and (2) understand and apply more research findings for many of the same reasons—to broaden the field's knowledge base, to establish sounder practice, to secure the professional school within the academy, and to mark the field as a profession. Some assert that library educators and library practitioners must work together: Katz concludes that an orderly and cumulative approach to library research will not occur until "there is a systematic linkage of library education with practitioners";[5] and Morehead argues that a participant-observer approach, with library educators making the library workplace a classroom, could eliminate the training/education and, by implication, the art/science tensions that plague library education and the field in general.[6]

The totality of such recommendations would have an impact on the field and its members in several ways. The time that library school personnel devote to research would have to be expanded, their research skills improved, and their passion for research fostered. Library school curricula and continuing education programs would need adjustment, in order to foster in the new entrant to the profession and in the mature professional the skills and attitudes necessary to apply and conduct research. Additional fiscal support would be needed from academia, from institutions of library practice, and from governing/administrative bodies concerned with library advancement (such as state libraries, federal support units, and municipal officers).

Faculty Output

The research output of faculty in library schools has been frequently criticized in the literature, and virtually all attention has been focused on North America and, particularly, on the United States. Several investigators have produced data indicating that the research

productivity of library school faculty is less than desired. Lane studied the productivity of persons with earned library science doctoral degrees and found that about 50 percent of them had produced less than one single-authored publication every ten years after receiving the degree. On the face of it a bad showing; but Lane goes on to report that the overall publication record of library doctorates falls within the normal range for other disciplines.[7] (On this point, Wilson expresses doubt about the validity of Lane's method.[8]) In their study of faculty production, Herbert White and Karen Momenee found that post-doctoral production of published research reports averaged less than one per year.[9] Ruth Katz, as a small part of her doctoral thesis, found that fewer than half of the responding faculty indicated that they had made any attempt to seek research funding.[10]

The quality of research produced by faculty has been criticized. Fry and Shaughnessy agree that the field in general and library schools in particular engage in applied research, to the virtual exclusion of basic research, and that too little of the research is generalizable.[11] If this is true for studies that carry the formal stamp of "research," it is surely true for studies that occur as part of consulting assignments where the purpose is to identify and resolve a problem in a specific application. Fry further claimed that much of the research in the field is characterized by primitive methodology, sampling and conceptualization. Both authors take the researcher and faculty members to task for not communicating the results of their research adequately.

Appreciating the importance of research activity to the field and, particularly, to the faculty's status in the university setting. Wilson offered a sketch for a research program *about* faculty research in library schools.[12] Although such research may be considered to be so much professional navel-gazing, in a class with studies of notable librarians or professional educational practices, it would have far-reaching effects. If followed, her prescription for a multiphased, multifaceted investigation of research production would give the field a baseline of data from which to evaluate faculty and school performance and would contribute to an improved research climate in library schools and, ultimately, to more research activity.

A number of authors have claimed that the field of librarianship operates without the "research front" that is required for steady advancement of the field through orderly scientific inquiry. That is, research activities in the field are fragmented—relatively unrelated to each other—and therefore not conducive to cumulation and the building of ever deeper knowledge. The knowledge that accrues from the

research tends to be spotty and shallow. Katz's data provide the most compelling evidence that library schools generate a body of research that is noncumulative and episodic.[13] Houser and Schrader's study of research in library schools—despite conceptual and methodological problems in that work—lends some empirically derived support to such claims.[14]

Factors Affecting Faculty Research Activity

Pauline Wilson offered an eloquent argument that the library school faculty is not exempt from the obligation of all academic units to produce research.[15] Research, after all, carries several benefits—it creates new knowledge, reapplies old knowledge, brings honor to academy and researcher alike, attracts higher quality faculty and students, improves teaching by providing new knowledge bases, and contributes to the general intellectual growth of the researcher. We might add the commonly noted benefit—it improves practice.

Nonetheless, it appears to many writers that research activity by library faculty occurs with too little frequency and at too low a level of quality. Why is it that "science" has come out the loser in the science-art tension? Buckland argues that one reason is a concentration, in the schools' research activities, on development rather than research:

> Within research and development, there is a heavy emphasis, characteristic of the field as a whole, on demonstration and development (seeking how to get things done better) rather than basic research (seeking to understand things better). To engage in basic research in a professional school is to risk outside criticism concerning "ivory towers."[16]

Viewed broadly, it may be that the schools have been busy responding to the very real, practical needs of the profession (getting things done better) and have thereby deemphasized the search for larger understandings. This, in turn, may be reflected in teaching and in the schools' concern with training (doing) rather than education (understanding). At any rate, educators seem to place less importance on research, and especially on basic research, than on other things.[17]

In a fairly recent study of deans and directors of library schools, Kingsbury sought to identify the importance of various criteria for evaluating faculty performance. She then compared their ranking to the rankings given by heads of professional schools and social science departments in a prior study. Interestingly, the rankings by the three groups are roughly similar. All see *teaching* as currently most impor-

tant followed by *"quality of publications, personal qualifications for the job"* and finally, *"research or creation independent of publication."* Asked how it *should* be, respondents would generally hold the criteria at about the same rank, with those in library schools and professional schools placing *"research or creation independent of publication"* above *"personal qualifications"* in importance.[18] It is important to note that the subjects of the study were administrators of library schools, not the faculty themselves; and that the importance of the research criterion may be higher among the administrators than it would be when polling all of the faculty. Katz, when comparing the attitudes of the faculty of library schools with the faculty of schools of political science and social science, found that the library school faculty consistently gave research less importance.[19] It would seem, as Wilson claims, that library school faculty are not fully socialized into their role as the academic segment of a profession and as university faculty—that, rather, they play the role of professional librarian, rather than professional academic.[20]

The most comprehensive treatment of factors relating to the presumed low level of faculty research production has been generated by Wilson.[21] Drawing from her investigation at the University of Tennessee, she proposed an "abstraction," or tentative model, by which barriers to faculty research in individual library schools could be identified. The model includes the following barriers or elements that compete with research activity:

1. Time-related barriers
    a. Professional service
    b. Continuing education
    c. Current awareness needs in teaching
    d. Lack of a pool of trained graduate assistants (since there is no undergraduate corps with prior exposure)
    e. Small scale of library schools and resulting need for larger
    f. Provision of one's own support service (typing, data entry, etc.)
2. Funding-related barriers
    a. Reduced levels of funding available
    b. Scattered and elusive sources of funds
    c. Federal or state funding priorities that are in disaccord with the faculty member's research interests
3. Personnel-related barriers
    a. Lack of research training[22]
    b. Lack of research interest[22]

Wilson goes on to propose some rather concrete solutions to the barriers

that could be applicable in various situations: (1) make the teaching activities more efficient (teach fewer classes more often, cluster teaching hours, reduce preparation time by involving outside resources such as speakers or films); (2) eliminate professional service except that relevant to the researcher/educator role; (3) provide support for research, such as released time from teaching, graduate assistants, secretarial help, and money; (4) anoint the unanointed, by training them in research methods or involving them with others who are doing research.

Student Research Output

Over the past two decades considerable change has occurred in the area of doctoral study. Since the Ph.D. degree is almost universally considered to be a "research" degree, it almost universally culminates in a "research" product—a thesis or dissertation. While there is some difference of opinion as to what constitutes "research," the numbers of doctoral degrees issued could be seen as a rough measure of the quantities of doctoral research being produced. One recent perspective on the doctoral count was reported by White and Momenee in 1978. They observed that the cumulative total of doctorates awarded between 1930 and 1950 doubled by 1959, doubled again by 1967, again by 1973, and was expected to double again by 1980 or 1981.[23] More recently, Schlachter and Thomison have reported the average number of doctorates related to library and information studies completed annually. They identify four eras and their annual production rates: 1925-1955 (4.45); 1956-1969 (21.64); 1970-1972 (73); 1973-1981 (111).[24] Whether or not the rapid acceleration through 1981 is continuing, it is clear that the numbers of doctoral research products have increased dramatically since the 1940s. This is echoed by the fact that twenty-four North American schools currently are listed as offering the doctorates; in 1970 that number was eighteen.[25] As a gross count of activity on the research front, these figures give reason for some elation—more research is going on.

We might expect the increased quantity of research to carry with it some improvements in quality, for we might expect *doctoral* study to be more often than not the most rigorous and innovative research in the field. Doctoral study, not being driven by administrative or operational necessities, should have the "luxury" of being research that is more basic, rather than applied, and more exploratory, rather than prosaic—in short, more risk-taking. It is in the body of doctoral research, if nowhere else, that the field should find research that explores new disciplinary frontiers or new research methodologies. It is doctoral

studies that should treat methodology and content most rigorously.

Doubt is cast on such expectations by White and Momenee, who indicate that only 22.6 percent of the doctorates claim to use even partially experimental methods, while more than 32 percent used historical methods.[26] Setterington, in his analysis of doctoral theses on library and information management, decries the "overwhelming preference for descriptive surveys rather than methodologies normal to administrative research"—i.e., case study, theory testing and model construction. He goes on to conclude that there are no "star" thesis supervisors in the library management area—no concentration of supervising activity—that the field has achieved no locus of excellence in the production of library management theses.[27] Shaughnessy has indicated that, of the 139 doctoral research products in library science listed in *Dissertation Abstracts* from 1972-76, "the great majority, 113 or 81 percent, are heavily oriented toward practice, application or problem solving. Only about twenty-six could be categorized as basic research."[28]

One might reasonably speculate that research in the field at large is even more appropriate for these criticisms. Moreover, the increase in doctorates as a predictor of increases in research in the field, generally, does not give cause for joy. That is, the increase in the number of people holding the doctorate has not necessarily brought with it a concomitant increase in the number of research efforts. Over 60 percent of the holders of doctorates in the field have indicated that they have not published any research findings since acquiring the degree. Several authors have advanced explanations for such findings; stated most broadly, the holders of doctorates seem to be simply "not interested enough," for a variety of reasons.[29]

It is safe to assume that, when little doctoral research was going on (through 1955), a significant portion of research in the field was being generated in the form of masters' theses. However, as long ago as the early 1950s, dramatic changes in this situation were taking place, and it is probably no coincidence that doctoral theses were increasing at this time. One can speculate that as schools developed Ph.D. programs, they became aware of the comparatively lesser quality of master's research, the increasing struggle to find topics suitable for master's research, and the excessive faculty energy required to maintain a research program for all master's students; and, therefore, the required master's thesis was abandoned. To support our speculation, Douglass found that the ratio of graduates to master's theses in that period had increased from 2.6 graduates per thesis to 6.8; and Walker reported that, for the same period, the ratio in schools with doctoral programs had increased even

faster.[30] In 1968, McMullen identified trends through observation of program offerings:

> (1) In library schools where the writing of master's theses is optional, almost all students choose not to write them. (2) Schools which continue to require theses of high quality have small student bodies. And (3) one or two schools which have kept the requirement are unusually permissive about the type of work done, accepting bibliographies and indexes which probably would not qualify as research in other institutions.[31]

Currently, only twelve members and associate members of the Association for Library and Information Science Education, out of seventy-five responding, require master's theses.[32] Thus there is relatively little mandating of serious research effort as part of the master's degree. Is the profession saying that the thesis experience (commonly a serious research undertaking) is not of universal value to all students—as a pedagogical device—or that it lacks value for the field as a source of research findings?

Schools as Research Educators

In addition to their role as a generator of research products, schools of library and information science assume the job of educating people in research. A number of writers propose two major ends for teaching research—so the student may perform it, or so the student may apply it. A third end for teaching research emerges in some expository writing. It is exemplified by Rayward's statement that, in the process of transmitting knowledge about research, the educator must also "inculcate certain critical, questioning attitudes towards this knowledge and its practical deployment."[33] So we find three major objectives for educating people in research—doing it, applying it, and embracing a critical attitude. However, "library education has yet to provide most students with adequate knowledge of research methodologies and has not been successful enough in encouraging future librarians to cultivate a productive, critical attitude toward many existing library principles, policies, and procedures."[34]

This quotation is not an uncommon polemic in the professional press. Few people have indicated that enough of anything has been taught in the profession's schools—be it management, reference tools, communication skills, or research methods. The indictment against education in research is sometimes (as in this case) based on personal experience and insight, rather than on systematic study. However, there

are some studies that lead to the same conclusion—that the people who enter the library and information science profession are less than optimally skilled in and oriented to research.

A Delphi study conducted in 1975, probing the future of library education, shed more systematic light on the subject. It was found that 82 percent of the respondents (opinion leaders in library and information science) felt there should be more active involvement by faculty and students in research and evaluation projects. Over 60 percent agreed on the need for required courses in statistics at the master's level.[35] Some inconsistency in the attitude of faculty toward the teaching of research is evident in findings from a 1967 survey of library school faculties. It was found that, while 87 percent of the respondents actually offered a course on research, only 57 percent favored doing so. The study also revealed a relatively even division among respondents in terms of their avowed *objectives* in teaching research. Thirty-two percent emphasized teaching research so the graduate could *conduct* it; 32 percent emphasized teaching research so the graduate could *evaluate* it; and 28 percent taught it for both reasons equally.[36] The profession's educators did not overwhelmingly support the teaching of research, and the field was fairly evenly split between the two major purposes for teaching it—literacy/use and conduct of research. There appeared to be ambivalence in general devotion and in purpose. These data are seventeen years old, and the professional literature has frequently expressed hope that the research milieu and attendant attitudes have changed since then. Yet, one can look to the writings of many of those cited in this paper for indicators—admittedly, many are based on soft, rather than hard, observation—that things may not have changed much.

Schools, Research and the Profession

Buckland claims that, as library and information schools "mature," or become more fully part of the academic, as opposed to the professional, community, the relationship between the forces of education and practice will worsen.[37] The dynamic tension that has been decried for decades by scores of writers will increase, as the faculties increasingly prefer academic over professional affiliation and thus, presumably, research over field-based activities.

The gulf between the domains of education/research and practice has been much written about. Recently, De Gennaro repeated his admonition that, "there is a big difference between theory and practice, thought and action."[38] While not denying the value of theory outright

(and research, could we assume?), he does question its utility for the practitioner. Indirectly, he seems to support others' contentions that the domain of practice is anti-empiricist (not anti-intellectual) and that the lords of that domain are not interested in building understandings larger than their own individual libraries or in putting research findings to practical use.[39]

Although he sees the tension between practice and academe intensifying, Buckland is cautiously optimistic about library and information educators' eventually donning the robes of faculty and bona fide researchers.[40] Yet, one could argue, until library and information educators are secure in their roles as academics, they will necessarily take significant cues for their behavior from the much larger forces of the practitioners. Those cues would encourage them not toward performing basic research or achieving larger understandings, nor toward producing graduates who are research-literate, research-skilled and critical; but toward addressing problems specific to a given library's technologies—hard and soft—and toward producing graduates armed with skill in those technologies rather than with understanding or breadth in the matter of librarianship. This is not to gainsay the need for people who can drive the technologies of libraries, but to say that concern for the technologies can continue to undermine concern for the larger understandings. Wilson and Katz underscore the need for the educators in the field to assume, on behalf of the profession, the role of builders of larger understandings.[41]

Overall, the literature conjures up a cycle of relationships. The field of practice insists that the schools concern themselves with solving the local and immediate problems of practice; the educators/researchers in the schools and the people who manage the schools have commonly worked in library or information practice and are sympathetic to solving such problems. The educators/researchers—being only modestly educated in research methodology and not especially keen on doing research in the first place—convey neither the cognitive nor affective elements required to imbue a student with the research method and the research spirit. Those potential students at both the doctoral and the master's levels who are inclined toward rigorous inquiry—not seeing faculty nor a line of research that might satisfy these inclinations—look to other fields; and the field continues to attract students with interests primarily in the technologies of the profession and secondarily in building larger understandings. New graduates evolve into the practitioners and continue, naturally, to influence the educators/researchers, in the pattern of their predecessors.

The cycle depicts the interrelationships of education, research and practice in the field today. As with any model, it is exaggerated. Sadly, it may not be very much so. From the point of view of reform for the field, it is certainly grim. Inasmuch as it is a social cycle composed of social elements, it seems fairly safe to say that the cycle will evolve slowly, if at all; and that what we see today is probably what we will get for many tomorrows.

Yet there are forces for change. Elements of the profession's infrastructure have been working to improve the research picture. The Association for Library and Information Science Education has a record of concern with promoting research activity among library and information educators, through awards, conference programs, and research presentations. The Library Research Round Table of the ALA has, since its inception, promoted the conduct and use of research. Perhaps its most vital impact has been to bring educators who are doing research into contact with practitioners who might apply the research. The dialogue that has ensued is one of the most promising developments in building a healthy relationship between research and practice. *Library and Information Science Research,* a journal devoted to research in the field, has been published since 1979. It seems firmly established (compared with previous attempts at research journals or newsletters in this country) and has become one of the highest-quality journals in the profession.

Conclusion

On the other hand, certain erosions in recent years may indicate diminished research intensity in library and information schools. Funding for research under Title II-B of the Higher Education Act has fallen steadily since the early 1970s; while some other money continues to exist at the federal level, much of that money is available only for specified projects or is administered under grant programs for which there is broad competition from many different fields (e.g., the National Science Foundation). In recent years, much of the reduced federal "research" money has been going to research and development firms rather than universities, thereby reducing the potential support of academic research programs. The research bureaus that once seemed to be increasing as formal focuses for research in library and information schools appear to be on the wane. The Library Research Center at the University of Illinois continues, with vigor; others, such as Rutgers', have disbanded or operate at relatively low levels of activity.

One is led to believe that a number of simultaneous actions must be taken to improve the state of research in library and information schools and to heighten the impact of that research. To a large extent, the actions are intended to improve the condition of the tension between art and science or, more specifically, between practice and academic research—i.e., research performed by academics: (1) The infrastructural elements that support communication between researchers, especially those in library and information schools, and practitioners must be continued and strengthened, through activity such as that of the Library Research Round Table and through publication activity that supports basic research and draws research and practice together. (2) The availability of money dedicated to basic research and to research that is not dictated by the immediate needs of practice must be increased. (3) Faculty must become unapologetic about their role as the builders of larger understandings through teaching and research. (4) A reward system must be instituted in the field of practice that encourages the use and, perhaps, the conduct of research. A concomitant attitude must be fostered in all practitioners so they value research as a basis for improving the art of library and information practice. (5) Schools must assure basic research "literacy" in all graduates. (6) Organizational elements that foster research in library and information schools and link research to practice must be developed or improved: a more formalized and active research focus in the schools, such as the Library Research Center at Illinois, or the Public Library Management Research Unit at Leeds Polytechnic in England; a reward system that demands research activity and the communication of research to people in practice should be developed; and a system of faculty time allocation and faculty support that make research activity possible. (7) Research education for doctoral students must be more rigorous, and recruiting and screening of doctoral applicants should ensure their dedication to research. This will likely require the use of faculty from outside the tradition of library and information research and education.

It is not proposed that such actions would eliminate the tension between the forces of practice and academic research for, as was pointed out at the beginning of the article, that tension is natural in a professional field. Nor can even the complete realization of a vital research program transform the field from an art to a science. Instead, these efforts may render the inevitable tension functional, rather than dysfunctional, so that practice seeks to be informed by academic research, so that practice provides a friendly locus for academic research, and so that library and information schools produce graduates who are attuned to

applying research to practice. These goals are haunted by a few worrisome questions: Can the profession and its schools alter their long-standing pattern of, at best, uneven interest in research, undistinguished research quality, and relatively low numbers of research products? Can practice and academe interact constructively on a wide scale, rather than merely defending their respective turfs? Will the static cycle envisioned earlier remain unbroken, or can the field—academics and practitioners alike—accept the need for improvement and take up the challenge to change?

References

1. Goldhor, Herbert. *An Introduction to Scientific Research in Librarianship.* Urbana-Champaign: University of Illinois Graduate School of Library Science, 1972, p. 2.

2. White, Howard D. "Review of Busha, Charles H. *A Library Science Research Reader and Bibliographic Guide*" (Littleton, Colo.: Libraries Unlimited, 1981). *Library Research* 3(Winter 1981):411-13.

3. Shera, Jesse H. *The Foundations of Education for Librarianship.* New York: Becker and Hayes, 1972, p. 421.

4. For example, see Shera, *The Foundations of Education for Librarianship;* ———. *Introduction to Library Science.* Littleton, Colo.: Libraries Unlimited, 1976; Wilson, Pauline. "Barriers to Research in Library Schools: A Framework for Analysis." *Journal of Education for Librarianship* 17(Summer 1976):3-19; and Goldhor, *An Introduction to Scientific Research in Librarianship.*

5. Katz, Ruth M. "Library Education and Library Research: An Analysis of Institutional and Organizational Context." Ph.D. diss., Rutgers University, 1975, p. 260.

6. Morehead, Joe. *Theory and Practice in Library Education: The Teaching-Learning Process.* Littleton, Colo.: Libraries Unlimited, 1980.

7. Lane, Nancy D. "Characteristics Related to Productivity Among Doctoral Graduates in Librarianship." Ph.D. diss., University of California at Berkeley, 1975.

8. Wilson, Pauline. "Factors Affecting Research Productivity." *Journal of Education for Librarianship* 20(Summer 1979):3-24.

9. White, Herbert S., and Momenee, Karen. "Impact of the Increase in Library Doctorates." *College & Research Libraries* 39(May 1978):207-14.

10. Katz, "Library Education and Library Research."

11. Fry, Bernard M. "Research Conducted in Library Schools." *Information Storage and Retrieval* 9(May 1973):249-55; and Shaughnessy, Thomas W. "Library Research in the 70's: Problems and Prospects." *California Librarian* 37(July 1976):43-52.

12. Wilson, "Factors Affecting Research Productivity."

13. Katz, "Library Education and Library Research."

14. Houser, Lloyd J., and Schrader, Alvin M. *The Search for a Scientific Profession: Library Science Education in the U.S. and Canada.* Metuchen, N.J.: Scarecrow Press, 1978.

15. Wilson, "Barriers to Research in Library Schools."

16. Buckland, Michael. "Theme V: The School, Its Faculty and Students." In *Changing Technology and Education for Librarianship* (Proceedings of the conference, "Frontiers II: Changing Technology: Its Impact in Scholarly Communications, Research Libraries and Education for Librarianship and Information Science," held at Whistler, British Columbia, Canada on 1-4 June 1983), edited by Basil Stuart-Stubbs. Greenwich, Conn.: JAI Press (forthcoming, fall 1984).

17. See Shaughnessy, "Library Research in the 70's"; White, Herbert S. "Defining Basic Competencies." *American Libraries* 14(Sept. 1983):519-25; and Katz, "Library Education and Library Research."

18. Kingsbury, Mary. "How Library Schools Evaluate Faculty Performance." *Journal of Education for Librarianship* 22(Spring 1982):224.

19. Katz, "Library Education and Library Research."

20. Wilson, "Factors Affecting Research Productivity."

21. _____, "Barriers to Research in Library Schools."

22. This is echoed by Katz, "Library Education and Library Research."

23. White, and Momenee, "Impact of the Increase in Library Doctorates."

24. Schlachter, Gail A., and Thomison, Dennis. *Library Science Dissertations 1925-72.* Littleton, Colo.: Libraries Unlimited, 1974; and _____. *Library Science Dissertations 1973-1981.* Littleton, Colo.: Libraries Unlimited, 1982.

25. Association for Library and Information Science Education. *Library and Information Science Education Statistical Report 1983.* State College, Pa.: ALISE, 1983; and "Graduate Library School Programs Accredited by the American Library Association." *American Libraries* 1(Nov. 1970):997-98.

26. White, and Momenee, "Impact of the Increase in Library Doctorates."

27. Setterington, Kenneth. "The PhD in Library Administation: A Report of Research." *Library and Information Science Research* 5(Summer 1983):177-94.

28. Shaughnessy, "Library Research in the 70's," p. 46.

29. White, and Momenee, "Impact of the Increase in Library Doctorates"; and Wilson, "Barriers to Research in Library Schools."

30. Douglass, Robert R. "The Library School Curriculum Ten Years After: Research and Research Methods." In *Report of Meeting* (Association of American Library Schools). Chicago: The Association, 27 Jan. 1958; and Walker, Richard D. "The Quantity and Content of Masters' Theses Accepted at Library Schools Offering the Doctor's Degree, 1949-1958." *Journal of Education for Librarianship* 3(Spring 1963):264-79.

31. McMullen, Haynes. "The Place of Research in Library Schools." In *Library Education: An International Survey,* edited by Larry Earl Bone, p. 352. Urbana-Champaign: University of Illinois Graduate School of Library Science, 1968.

32. ALISE, *Library and Information Science Education Statistical Report 1983.*

33. Rayward, W. Boyd. "Conflict, Interdependence, Mediocrity." *Library Journal* 108(July 1983):1315.

34. Busha, Charles H., and Purcell, Royal. "A Textual Approach for Promoting Rigorous Research in Librarianship." *Journal of Education for Librarianship* 14(Summer 1973):5.

35. Vance, Kenneth E., et al. "Future of Library Education: 1975 Delphi Study." *Journal of Education for Librarianship* 18(Summer 1977):3-17.

36. Petrof, Barbara G. "The Status of Research Courses." *Journal of Education for Librarianship* 8(Summer 1967):28-32.

37. Buckland, "Theme V: The School, Its Faculty and Students."

38. DeGennaro, Richard. "Theory Vs. Practice in Library Management." *Library Journal* 108(July 1983):1318.

39. Shaughnessy, "Library Research in the 70's: Problems and Prospects"; and Fry, "Research Conducted in Library Schools."

40. Buckland, "Theme V: The School, Its Faculty and Students."

41. Wilson, "Barriers to Research in Library Schools"; and Katz, "Library Education and Library Research."

This Page Intentionally Left Blank

Funding of Research in Librarianship

SHIRLEY GRINNELL FITZGIBBONS

Introduction

THIS ARTICLE DESCRIBES funding for research on librarianship during the last twenty years, 1964-84. Specific questions initially framed for exploration within this article include:

1. What were the major funding sources?
2. What were the amounts available for funding of research?
3. What were the priorities and emphases of the funding sources in terms of types of research, subject areas, and methodologies?
4. Are there patterns in terms of the recipients of the funding?
5. Are there other discernible trends in research funding for librarianship?

It was not possible to answer all of these questions for reasons which will be explained. However, partial answers are given and suggestions are made for additional work.

Literature searches on funding for research on librarianship were not very productive. Two yearly sources of information were identified: tables in the *ALA Yearbook* published since 1976 under the topic, "Research,"[1] and an article on "Research on Libraries and Librarianship" published annually in the *Bowker Annual of Library and Book Trade Information* since 1979.[2] Also used were: the *Library Trends* on "Research in Librarianship"[3] and the one on "Research Methods in

Shirley Grinnell Fitzgibbons is Assistant Professor, School of Library and Information Science, Indiana University, Bloomington, Indiana.

Librarianship"[4]; review articles by Janaske (1975),[5] Ferguson (1975),[6] Whitbeck, et al. (1979);[7] and most importantly, *A Library and Information Science Research Agenda for the 1980s* (1982),[8] by Cuadra Associates, were used. The annual reports of the Council on Library Resources, 1970-82[9] were examined, as were *Federal Programs for Libraries* (1979),[10] and the *Directory of Library Research and Demonstration Projects, 1966-1975* (1978).[11]

Previous Findings

Information on funding for research is scattered as well as scarce. Some can be found in reports of funding organizations, but these agencies are inconsistent in how they report projects funded. In addition, reports of research found in the literature do not always acknowledge funding sources.

In two previous issues of *Library Trends* devoted to research in librarianship, funding did not warrant a major article. However, there were some pertinent comments on the state of funding in each issue. Tauber's introduction to the 1957 issue mentioned funding several times;[12] Shera's review of documentation research described funding;[13] and Dane also made recommendations concerning funding.[14] In the 1964 issue of *Library Trends,* comments on funding are made in two articles.[15]

Ferguson's 1975 report[16] on the dissemination of research in library and information science research noted that research is being done by a number of different agents and funded in several different ways. Ferguson further commented that for the previous two decades, most research had been supported from four sources: federal and matching funds under the Library Services and Construction Act (LSCA, 1956-), the Council on Library Resources (CLR, 1956-), the Office of Education's (OE) Division of Library Programs under Title II-B of the Higher Education Act (HEA, 1965-) and the National Science Foundations's (NSF) Office of Science Information Services (1954-). LSCA was used to support public library projects involving demonstrations of new services and interlibrary cooperation; CLR emphasized projects related to academic and research libraries; OE supported a wide range of activities including major library automation projects; and NSF supported research on applications of computers to improve services for the science and technology community. The 1960s and early 1970s produced tremendous growth in research activities, according to Ferguson.

He reported that the National Science Foundation had a sixfold growth in funding between 1960 and 1974; and that OE's Department of

Library Programs had total funding under Title II-B of $21,402,000 from 1967 to 1975. Unfortunately, as Ferguson pointed out, there was no single source which reported all funding for research in librarianship. Though ten research centers were identified by Ferguson in 1975, he noted that many of the centers were less active in the 1970s than in the 1960s.

Also in 1975, Janaske summarized the role and state of federally funded research in librarianship. He emphasized that most projects are not funded exclusively by the federal government, but rather receive multiple sources of funding, including local, municipal, state sources, or private sources. Legislation had provided financial resources with a limited intent. Within the federal government, he identified the agencies that support research for library activities as NSF, the Department of Defense (DOD), the Department of Education and Welfare (DEW), the National Library of Medicine (NLM), and the National Institute of Education (NIE). Because most government-funded research is mission-oriented, reflecting the purposes of each agency, HEA's Title II-B general program of funding to support the improvement of library practice is very important. Janaske acknowledged the confusion between research and demonstration, quoting Shera's definition of research, and then defined demonstration as the "implementation or operation of a new concept, service, or program in an effort to establish a basic premise or hypothesis."[17] However, neither Janaske nor others have tried to separate amounts of monies spent for research from those spent for development projects.

In 1978, Slanker[18] identified the three most important federal agencies funding research in library science: the National Science Foundation, the Office of Education's HEA Title II-B program and the National Library of Medicine. She also identified two new research groups which began operation in 1976: The Centre for Research in Librarianship at the Faculty of Library Science, University of Toronto (the only such research center in Canada); and the Book Industry Study Group, a voluntary association to promote research in and about the industry.

Whitbeck et al.[19] analyzed a limited database of research funded during FY 1976 and identified through published lists of research and development awards, fifty-five instances of awards given by foundations and federal agencies. In addition, Whitbeck surveyed librarians in academic and public libraries through a stratified random sample; and he also surveyed library school faculty (randomly selected from the Association of American Library Schools' membership directory) involved in research (ninety-nine cases). The analysis indicated that most funds

went to support research in technology and library development, with smaller amounts being granted for education and training, planning and development, and institutional cooperation. Though the survey results suggest that most of the research in librarianship is being done in library schools, published lists indicated that educational agencies (e.g., state education departments, higher education boards) received the most institutional grants, followed by library schools and academic libraries. Whitbeck found that for FY 1976, federal agencies were the primary sources of funding, with HEW supporting nineteen grants for a total of almost $1 million; NSF supporting six grants for $449,000; and NLM supporting one grant for $134,600. However, CLR supported thirteen grants, for almost $900,000; and other foundations supported sixteen grants for almost $700,000. The results of Whitbeck et al.'s survey of researchers indicated that some type of monetary or indirect support had been awarded to about three-quarters of researcher-respondents in 1976. The review concluded that the "well-funded projects use methods which are only marginally research" and that "support of research in librarianship tends to be scattered, with no single source of funding predominating."[20]

Garrison,[21] in an exploration of the state of public library research in the 1970s, classified research projects in three categories and ascribed a dollar value to the total of each type. He found ninety dissertations at an estimated $2.25 million; forty HEA Title II-B projects, at almost $4 million; and sixty-three "other" projects at an estimated $3-plus million. Garrison found that most studies relating to public libraries funded by Title II-B monies were in areas of new services, new ways to deliver services, and studies of new user groups.

The report by Cuadra Associates presenting a *Library and Information Science Research Agenda for the 1980s* summarized funding for research from 1970 to 1980 as follows:

> The belief is widely held that funds available for government and other national-level support of [research, development, and demonstration] in the field of library and information science declined sharply during the 1970s. This perception is not altogether accurate. To be sure, the funds available for research that many librarians would consider to be directly relevant to their problems and challenges have been decreasing, whereas the funds for information science (or better, science information) have largely held steady from the one organization—NSF—that provides major support for such research. But the overall picture of funding patterns over this past decade is rather mixed. Some organizations have reduced levels; others have increased them; others display a highly variable pattern of funding, with sharp changes from year to year. Such changes make it

difficult to assess and describe the status of funding for library and information science.[22]

The *Research Agenda* clearly stated the complications involved in trying to draw clear, clean lines between research on the one hand, and development and demonstration on the other, as well as the problems inherent in these distinctions. It also noted the proprietary nature of many studies which are in-house company research to support the development of technology-based information services as distinguished from research conducted, on behalf of the public to enrich the nation's store of knowledge.

The report predicted a certain level of austerity during the 1980s and asserted that any investment in research should have a high payoff. This requires concerted planning and attention to priorities, and to the quality of the research funded. A table in the *Research Agenda* summarizes library and information research funding patterns from 1970 to 1980 for the following funding sources which could provide detailed funding data:

—Carnegie Corporation
—Council on Library Resources
—Department of Education/National Institute of Education
—Department of Education, Office of Libraries and Learning Technology
—National Commision on Libraries and Information Science
—National Endowment for the Humanities
—National Library of Medicine/Extramural Grants Program
—National Library Service for the Blind and Physically Handicapped/Library of Congress
—National Science Foundation, Division of Information and Technology[23]

From 1970 through 1980, 600 projects relevant to library and information science were funded by these nine organizations. However, it should be noted that the report's definition of research included demonstration and "desk" projects related to the theoretical basis of information science. The research areas that received the largest amounts of funding (totaling over $2 million) involved the following subjects:

—generation of information in various disciplines
—computer system design and evaluation
—management
—document representation
—user studies

The *Research Agenda* found that funding was concentrated among less

than a dozen organizations, with a handful supplying most of the monies disbursed for research and demonstration:[24]

> Of the nine major funding sources included in this analysis four have provided more than $5 million, over the nineteen year period:
>
National Science Foundation, DIST 1974-1980, information projects	$33 million
Department of Education, OLLT 1970-1980, library research and demonstration projects	$10.5 million
National Library of Medicine/Extramural Program 1970-1980, information science and systems research in the health sciences	$8 million
Council on Library Resources 1970-1980, research demonstration and development, library area	$5.3 million[24]

Foundations, except for CLR, did not fund research during this period but provided funds for development projects and for collection building. The *Research Agenda* project categorized the 600 projects it identified into thirty-two areas of inquiry, identifying for each area the number of different funding sources and level of funding. My examination of the titles of the same studies (especially those funded by CLR, OE's Title II-B funds, and NSF) would indicate that more demonstration and "other" studies were included in these 600 projects than scientific research.

Despite a serious effort to analyze funding sources, the *Research Agenda* report still concludes:

> We do not know how much money is now being spent for library and information science research. The total funding provided by the "name" research-sponsoring organizations is probably only a fraction of what is being spent in various public and private organizations for research that is directly relevant to their needs...much of which is never reported in the professional literature...; there is no common agreement on what proportion of total expenditures in any field or in any endeavor should be allocated for research to continue effecting improvements.[25]

Problems in Analyses of Funding

Definitions

Several problems occurred both in the summaries of funding just described and in the analyses to follow. One is the problem of definitions of research, which Lynch discusses earlier in this issue. Distinctions between scientific research and its relatives (demonstration and development, service/consultation studies, and fact-gathering) could be

made through a careful analysis of each study's proposal and/or completed report; but it would be a major undertaking to assemble these materials for analysis. That was not done by this author and probably was not done in the reviews just cited. Previous reviewers seemed to accept all funded projects as research—when it seems clear, even by the titles of the projects, that many of them are demonstration and development projects, or involve collection development. Consequently, the total amounts of funds and numbers of projects do not reflect accurately the actual pattern of funding for research. The previous reviewers did comment on the problem; however, their tables and commentary still indicate that they are reporting funding for *research*. The danger these reports present is that it looks as if a tremendous amount of money has been spent for research in library and information science in the 1970s and early 1980s, whereas it is very probable that only a small amount of these funds were expended to support the scientific research which leads to new knowledge.

What is needed is a critical appraisal of each funded project to ascertain whether the project is scientific research as defined by some respected authority such as Shera who explained research as the "answering of questions by the accumulation and assimilation of facts which lead to the formulation of generalizations or universals that extend, correct, or verify knowledge...."[26] Earlier work in analyzing a body of papers to ascertain research quality was done by Atherton[27] and by Coughlin and Snelson[28] and could serve as models.

For this article, using only the information provided by the funding agencies to the *Bowker Annual* and the *ALA Yearbook*, it was not possible to make such distinctions. However, it was possible even by examining just the titles of projects to eliminate a large number of funded projects as demonstration, development, consultative reports, or fact-gathering at a simply descriptive level. Consequently, in the following summary of reports on funding sources, rough approximations are proposed of those projects which might be considered research as compared to other use of monies—such as expenses of individuals attending conferences, support of publications, or support of information meetings.

In dealing with some of the major funding agencies, especially NSF and NLM, another delineation which needed to be made was the identification of projects which had any application to librarianship at all, either theoretical or applied. It soon became apparent either through the titles or by the researcher's affiliation that many of the projects funded by these two agencies were not related to librarianship but were

in the areas of computer science, engineering, theoretical mathematics, medicine, and so on. It does not appear that previous reviewers made these distinctions when reporting funding patterns.

Identification of Sources and Results

Another problem is the lack of clearly-identified sources of funding for research in librarianship. The *Research Agenda* made a significant attempt to do this; however, it does not appear that the authors really identified *research,* as distinguished from its relatives, or that they identified only *studies with application to library and information science.* It is quite possible that this reviewer has fallen into another trap: only those previously identified sources of funding were pursued, whereas additional sources may exist. If each author in this issue had been asked to include an analysis of funding sources for the body of research he or she was reviewing, we might have been able to identify additional funding sources. That was not done for this issue but the idea might be pursued for future issues of *Library Trends.* Even among the sources identified by the *Research Agenda* and other reviews, it is difficult to assess patterns of funding by sources due to changes within government agencies, changes in priorities of legislation and agencies, and inconsistent reporting practices. Dissemination of research results is not always accomplished. For example, it is often difficult to find complete reports of studies funded by CLR.

Major Funding Agencies

This section will review the activity of four major research funding agencies: the Department of Education's HEA Title II-B program, NSF's Division of Information Science and Technology program, NLM's extramural research program under the Medical Library Assistance Act, and the CLR. After a brief historical summary of each agency's activities, some analysis will be provided. Lists of funding amounts, researchers, institutional affiliations, and titles of projects can be found in either the *Bowker Annual* or the *ALA Yearbook.*

Higher Education Act of 1965, Title II-B, Library Research and Demonstration Program

The Library Research and Demonstration Program was initially authorized to award and administer grants and contracts for research and demonstration projects related to the improvement of libraries, training in librarianship and information technology, and for the dis-

semination of information derived from these projects. As of 1981, the program was expanded to include promotion of economic and efficient information delivery, cooperative efforts related to librarianship, the support of developmental projects, and the improvement of information technology. Initially, grants and contracts were given only to not-for-profit organizations such as institutions of higher education or other public or private agencies, institutions or organizations. In 1981, program eligibility was expanded to include profit-making organizations.[29]

Originally, the program emphasized demonstration rather than research. Robert Klassen, summarizing the first nine years (1967-1976), stated that it, "has developed nationally applicable models of alternative ways to best meet library and information needs...[and] projects to develop new techniques and systems for processing, storing, and distributing information....The aim is to stimulate developments that can be replicated."[30] In 1975, Janaske reported that 221 projects were funded from FY 1967-1974 by the Title II-B program, for a commitment of approximately $18.7 million. He then described major funding categories during the period.[31]

Garrison's review of public library research in the 1970s identified forty projects funded under HEA Title II-B, with application for public libraries, accounting for an estimated 15 percent of all Title II-B awards, and involving a total of $7,918,000 in federal funds. Garrison noted that the priorities of this program were more often the result of politics rather than the "perceived needs in the library world."[32]

Title II-B has had a hazardous career. Various presidents have proposed elimination of the program several times and appropriations have never reached the level of authorization. Originally funds were given in grants to researchers whose proposed projects fit federal priorities; however, since 1980, only contracts have been awarded; and it seems that this will continue. Appropriations have been extremely low in recent years. For example, in FY 1980, only four projects were funded out of an allocation of $333,000, with much of the money being awarded to King Research, Inc. (KRI) for the *Library Human Resources: A Study of Supply and Demand* ($176,151). In FY 1981, only two major contracts were awarded: one to Cuadra Associates for the *National Research Agenda for the 1980s* ($127,354), and one to Simmons College for *Citizen's Information Needs, Phase 2* ($56,888).

In FY 1982, only one contract was awarded, to KRI for *New Directions in Library and Information Science Education* ($243,438). A total of $240,000 was awarded in FY 1983, three of the awards going to for-profit organizations (one again to KRI), and only one to a researcher

from a library school. In FY 1984, the Department of Education's HEA Title II-B program will continue to conduct directed contract research.[33]

It is almost impossible to ascertain which projects funded by HEA Title II-B are research studies and which are demonstration projects and/or evaluative/consultative reports. Program officers have asserted that funds were devoted mostly to demonstration in early years. Though several major studies have resulted from this funding source, the contract research awarded since 1980 probably would not qualify as scientific research. Yearly tables in the *Bowker Annual* summarize funding patterns from 1967 to 1983 and show a range of funding from the high of $3,550,000 in FYs 1967 and 1968 to a low of $250,000 in FYs 1981, 1982 and 1983. In 1967, thirty-eight projects were funded while only one to four have been funded annually since 1980. A total of $4,015,572 was awarded for sixty-eight projects from FY 1977 through FY 1983. This author has identified the following trends after reading recent summaries of this program:

1. Funds are used for a few large contracts rather than many small grants.
2. Funds are designated for one topic determined by its administering office (e.g., librarian competencies; a national agenda for research).
3. Contracts are awarded to for-profit organizations rather than to university and individual researchers.

National Science Foundation

Congress established the National Science Foundation (NSF) in 1950 as an independent agency to promote the progress of science. From 1958 to 1978, support for the NSF's research activities related to librarianship was provided through the Office of Science Information Service (OSIS) with emphasis on access to the world's scientific and technical information. In 1974, Lee Burchinal, head of OSIS, reviewed past activities, emphasizing that much effort was devoted to "strengthening and expanding the science information services of the professional scientific and technical societies,"[34] with funds to establish new journals, translation services, major national science information services—such as the Science Information Exchange and LC's National Referral Center for Science and Technology—and funds for development of computerization of science and technology databases. Also, research on basic information science problems was supported.

In 1974, NSF began to stimulate improvements in the scientific and technical information-transfer process through research and development to stimulate needed cost-effective and innovative improvements.[35]

In FY 1975, new directions were identified: research on basic information science problems and formulation of theories and mathematical models for information transfer; and a focus on applied research to convert basic findings into prototype developments. In 1978, the Division of Information Science and Technology (IST) was established as a new research division to support basic and applied research to advance understanding of the properties and structure of information and information transfer and to knowledge with application to the design of information systems. Today, the agency supports basic and applied research in information science; preference is given to fundamental and general research and to applied research concerning scientific and technical information. From 1977 through 1983, a total of $36.3 million was awarded for 391 projects; it could be questioned, however, how many of the projects are closely related to library and information science.

In 1980, Atkinson made a significant comment on the role of NSF in funding for research in librarianship: "Although it still provides the largest amount of funding in these fields of any of the national agencies ...almost all of the investigators in this field are from outside library science. They seem to cluster in the disciplines of psychology and computer and information science."[36]

The National Library of Medicine

The National Library of Medicine (NLM) has conducted and funded health science information research both intramurally and extramurally.[37] Under the authorization of the Medical Library Assistance Act (1965), NLM provides for an extramural program for many purposes, including support for research related to health science communication. There is no easily available source of information on NLM grants before 1976. A table reporting these grants has been published annually since 1977 in the *ALA Yearbook* (with each annual reporting activity of the previous year). These tables show amounts ranging from $246,000 for new awards in 1982 to over $5 million for both new and continuing awards in 1978. Because the method of reporting varies from year to year, it is difficult to determine amounts actually available from NLM. That work should be done, however, by someone who has access to a complete file of information on NLM awards. According to information reported in the *ALA Yearbook* from 1978 through 1984, the totals for NLM funding include a total of $15,818,547 for 119 projects; a later table will suggest how much of this total amount might be considered directly related to library and information science.

In 1980, Williams noted two trends which she felt posed a threat to government institutions that conduct and support information science

research: the decline in funding for information science research and development (both at NLM and NSF), and an accelerating contention between the public and private sectors in the information field. Williams felt that NLM had been a leader in research in this area, and that the questioning by the private sector of the appropriateness of NLM's activities posed a threat to their research program. In the growth of online databases, she contended that the federal government—and NLM and NSF in particular—have paved the way, with examples such as NASA, NTIS, ERIC, AGRICOLA, and MEDLINE.[38]

Council on Library Resources

On 18 September 1956, the Ford Foundation established the Council on Library Resources, Inc. (CLR) with an initial grant of $5 million. The Council was to be an independent, nonprofit organization devoted exclusively to library problems. Its purpose would be "aiding in the solution of the problems of libraries generally and of research libraries in particular; conducting research in, developing and demonstrating new techniques and methods, and disseminating through any medium the results thereof; for making grants to other institutions and persons for such purposes; and for providing leadership, and wherever appropriate, coordination of efforts...."[39]

In its first twenty years, 1956-76, CLR received $29 million in grants from the Ford Foundation. The first priority during its early years was "the exploration of technological means to solve problems that confront libraries in their service to scholarship and research."[40] Basic research, characterized by looking at the processes of distribution, organization, storage, and communication of knowledge through libraries, was seen as important. Three crucial areas identified for study were bibliographic access, physical access and administrative arrangements.

Early in its second decade of existence, CLR changed focus and emphasized strengthening management skills of research librarians and developing programs to meet the needs of users. Since 1970, CLR has funded grants of more than $550,000 to ARL's Office of University Library Management Studies. In addition, "programs in the area of automation, networks, standards, and national library services have over the years consumed 45 percent of available Council funds."[41]

The CLR Fellowship Program (1969-), which sometimes supported the research of individual investigators, was suspended following the 1979-80 academic year, though the Council continues to accept research proposals from individuals. Probably not more than one-half

of these awards were used for research; many were for bibliographic projects, travel and faculty development. However, they have served as an important source of small grants for individual faculty to pursue a scholarly interest.[42]

In the 1983 *Bowker Annual,* Rosenberg[43] reported that CLR, currently supported by a number of foundations, including Andrew W. Mellon and Carnegie, is funding in the following areas: bibliographic services; professional education, training, and research; library operations and services; and library resources and their preservation. In addition, two major programs are maintained: the Bibliographic Service Development Program with a focus on access to bibliographic databases and control of costs; and the Professional Education and Training for Research Librarianship Program (PETREL) which provides small grants to support joint research projects by faculty members and librarians. A goal of the new program in professional education and training is to "raise the quality of and make more pertinent the research related to library matters and increase the involvement of librarians and others outside the profession in the research process."[44] Gwinn noted that a likely prospect for future funding is "support for research by library educators and others on major issues of direct pertinence to research, library operations and management.

A total of $6,813,316 for FYs 1976/77 through 1982 has been expended by the Council on Library Resources. Later discussion will suggest what proportion of this amount might be considered research funding.

Review of Major Funding Sources

As stated earlier, it was not possible to distinguish explicitly between *scientific research* and its relatives for this paper; however, it was possible to separate out some of the relatives—demonstration, development, consultation reports—as well as other funded projects such as collection development, travel, conference expenses, and the like. What remained of the studies may or may not be scientific research (the results of the analysis appear in table 1).

In addition to making the distinctions just described, it was necessary to assess whether the study was within the field of library and information science, defined as that body of information taught in schools with the corresponding name. For NSF and NLM, this assessment was especially was especially important, as it was obvious that many of the studies, though they constituted scientific research, were not within this field. If the project was done by a person or persons

TABLE 1
SUPPORT FOR RESEARCH IN
LIBRARY AND INFORMATION SCIENCE—1977-1983

Agency	*Total Awards*	*Awards for Research*
NSF	36,300,000 *(391)	5,732,694 *(56)
NLM	15,818,547 (119)	3,569,780 (23)
CLR**	6,813,316 (177)	2,059,745 (43)
HEA Title II-B	4,015,572 (68)	NA
Totals	$62,947,435 (755)	$11,362,219 (122)

* Parenthetical numbers represent number of projects funded
** Data not available for 1983

known to be producing work in the field of library and information science. For projects funded by CLR, it was assumed that the work always related to library and information science, and evidence was sought that the project was likely to be research as distinguished from a relative. This was done by judging the titles, using as criteria words which would indicate that the project was something other than research. For HEA Title II-B, no attempt was made to distinguish between research and its relatives because the program was designed to be both research and demonstration. It would be of interest, however, if those funded projects were subjected to the same type of scrutiny.

In table 1, funds available from 1977 to 1983 for research in library and information science are listed separately from the total funding for each agency along with the number of projects funded.

Clearly, this analysis is only preliminary. In order to provide valid and reliable information, it would be necessary to gather complete information on the projects, establish criteria to be used, and have the field of content analysis could be used to ensure that this judging was valid and reliable. That work remains to be done. It seems probable to this writer, however, that the results would not be very different from what is reported here.

These amounts represent between 16 percent to 30 percent of the total funding of these three sources. Though NSF and NLM appear to be the most important research funding sources in terms of total amounts, their emphases on either scientific information or health sciences information make their funds available only to researchers interested in those areas. The same can be said for CLR with their focus on academic and research libraries. Consequently, even though the HEA Title II-B has been the smallest program, and increasingly so, it has held the most promise for researchers seeking funding for research in other areas of the profession. Since 1980, with contract research only being funded, this program no longer offers that advantage. What seems to be missing are funds for research that an individual or a group within the profession identifies as necessary.

Professional Organizations as Funding Sources

Though professional library and information science organizations do not fund research in any quantity—either in terms of number of projects or actual monies—small amounts are available. Within the American Library Association, the Association of College and Research Libraries (ACRL), for example, established two annual awards in 1982 (with support of the Institute for Scientific Information)—The Samuel Lazerow Fellowship for Outstanding Contribution to Acquisitions or Technical Services in an Academic or Research Library ($1000) and the Doctoral Dissertation Fellowship ($1000) in the area of academic librarianship. The Young Adult Services Division (YASD) established the Voice of Youth Advocates (VOYA) Research Award ($500) in 1982 for annual awards beginning in 1984. Since 1975, the Library Research Round Table (LRRT) has awarded either $400 or $500 awards each year to one or two authors of outstanding papers. The J. Morris Jones/Bailey K. Howard/World Book Encyclopedia, ALA Goals Award of $5000 partially supported a substantial study by Leigh Estabrook and Kathleen Heim, entitled "A Pilot Profile of the Women Members of the American Library Association." This was sponsored by ALA's Committee on the Status of Women in Librarianship (COSWL).

The Association of Library and Information Science Education (ALISE), formerly the Association of American Library Schools (AALS) began in 1978 to offer one or two grants (for a total of $1500-$2500) to support research proposals broadly related to education for librarianship and information science, under their Research Grant Awards. Beginning in 1983, ALISE has also offered up to three awards of $100

each in their Doctoral Students' Dissertation Competition Awards, and up to two awards of $500 each in a Paper Competition for research on any aspect of librarianship and information studies. Their total program of research awards in 1984 amounted to research funding up to $3800. Support for research has become a priority of the organization and it is reflected in their goals, objectives and budget.

The American Society for Information Science (ASIS) in cooperation with the Institute for Scientific Information offers a dissertation scholarship of $1000 to foster research in information science. Recently, the *ASIS NEWS* (February 1984) announced a recommendation of their Research Committee to bestow an annual research award.

The Special Libraries Association (SLA) formerly sponsored a Grants-in-Aid program that supported research projects carried out by units of the association, individuals, or groups. From 1974 to 1980, six projects were funded for a total of approximately $4000, but by 1981 that program was discontinued. In 1983, SLA established a Special Programs Fund with grants to encourage programs and services that further the scientific, literary, and educational purposes of SLA, for a total of $5000. These projects may be research-oriented.

Problems and Recommendations

Wilson[45] has identified three categories of barriers to research in library schools: time, money and personnel. She also suggests several difficulties in depending on funding by the federal government and by state library agencies: a reduced amount of money, scattered sources (making it difficult to identify appropriate sources), and the fact that these agencies have priorities which impose conditions or constraints on research, making the funds unsuitable for some faculty members and uninteresting for others. Wilson feels that there is a perception of bias in the awarding of federal money, and that state library agencies which have federal funds at their disposal through LSCA monies often lack interest or knowledge about research and have a greater interest in demonstration projects. Another major problem Wilson identified is that researchers in library and information science graduate programs must compete for internal funds, often finding it difficult due to the lack of a research tradition in the field.

Hewitt has delineated a problem that has been apparent in several studies completed by for-profit organizations under contract research:

> Many research questions in the field of librarianship...present extremely difficult problems of research design and methodology.

> The effect of underrating the complexity of library research is most profound on contract studies,...because after the contract is awarded and the budget and schedule set, it is difficult to renegotiate.[46]

Hewitt also highlights a related problem, that of the tendency to take on research questions without the proper background work, producing a hybrid, partially a research study and partially a consulting report. "Perhaps an even greater danger of the tendency to couple research and consulting is that the methods and standards of consulting have tended to invade research. The methods of research should be much more rigorous than those of consulting and the standards much higher."[47] Though this may not appear to be a funding issue, the large numbers of contracts awarded to consulting firms rather than to known researchers does make it a pertinent problem.

Several recommendations are appropriate, based on the findings of this review. First, it is obvious that all areas of library practice need an organization such as the Council on Library Resources which will promote studies leading to improvements for practice. Though the research and university setting (the focus of CLR funding) is an important one, public and school libraries are equally vital to an information-rich public in the future. An organized, funded and well-planned effort needs to be made for the improvement of library services for all age groups. Though the *Research Agenda* has identified high-priority areas of needed research, the federal government and other funding agencies still need to be sold on programs for research in these designated areas and other areas. Hannigan, in a 1983 paper on library education, pinpoints a problem of research funding, and suggests a solution:

> I believe that we need monies, and I mean large chunks of money, to establish the kind of research environments that exist in some other disciplines and then to test the relationship of that environment to the quality of education provided within it. I would like to see grants that require a large scale commitment to research in a given institution rather than continued funding of "loner" concepts.[48]

Second, it is suggested that the major areas of needed research will continue to be defined, in addition to, and as part of a reassessment of the five *Research Agenda* priority areas. This should be done by professional organizations and scholars in each area of the field. Third, a nationwide effort should be made to secure funding programs, through the leadership of professional organizations, possibly in coordination with the National Commission on Libraries and Information Science. The recommendation made in the 1957 issue of *Library Trends*—the need to have coordination for a program of research in librarianship—is

still valid and remains to be accomplished. Fourth, it is important that faculty scholar-researchers be given a fair share of research grants and contracts in their areas of expertise in order to push forward the knowledge base of this practice-based field, and so that library and information science faculty take their rightful positions as scholars and serious researchers at their universities.

Further Questions to Explore

This exploratory effort to assess the adequacy of funding for research for librarianship has raised several additional questions which need to be addressed:

1. How many of the HEA Title II-B-awarded projects are research-based compared to demonstration and development?
2. How many of CLR's funded projects can be considered scientific research?
3. How many of the studies funded by NSF's IST program and NLM's extramural program are research with applications (either theoretical or practice-based) for libraries and information centers?
4. How much of faculty research emanating from graduate library and information science schools is funded either in-house or with outside funding? What are the sources, amounts of funding, and subject areas? Has the presence or absence of research centers within those schools contributed to the funding or lack of funding?
5. How many doctoral dissertations are funded, in comparison to those not funded? What are the funding sources, amounts and preferred subject areas?

Lynch has argued earlier in an unpublished report cited in the *Research Agenda:* "None of us would argue that research in our field is adequate to the need....But, respectable research can be done without 'major funding.' While we are looking for major funding, we need to remember that and act accordingly."[49] However, Janaske has suggested that funding for research is important if that research has any urgency because: "Many of the projects funded as research and demonstration could have been done without federal support, but it might have taken ten to twenty years longer to get the job done."[50]

Our time may be running out because of the urgency of researchable questions related to libraries and information services for all publics. It is time for leadership and coordination of funding for research in library and information science.

References

1. "Research." In *ALA Yearbook*. Chicago: ALA, 1976-83.

2. "Research on Libraries and Librarianship." In *The Bowker Annual of Library and Book Trade Information*. New York: R.R. Bowker, 1979-84.

3. "Research in Librarianship" (issue theme) (Edited by the Committee on Research, Association of American Library Schools.) *Library Trends* 6(Oct. 1957).

4. "Research Methods in Librarianship" (issue theme) (Edited by Guy Garrison). *Library Trends* 13(July 1964).

5. Janaske, Paul C. "Federally Funded Research in Librarianship." *Library Trends* 24(July 1975):101-14.

6. Ferguson, Douglas. "Disseminating Library and Information Science Research in the United States." *UNESCO Bulletin for Libraries* 29(Nov.-Dec. 1975):319-28.

7. Whitbeck, George W., et al. "Funding Support for Research in Librarianship." In *Advances in Librarianship*, vol. 9, edited by Michael H. Harris, pp. 185-209. New York: Academic Press, 1979.

8. Cuadra Associates. *A Library and Information Science Research Agenda for the 1980s: Final Report*. Santa Monica, Calif.: Cuadra Associates, Inc., 1982.

9. Council on Library Resources, Inc. *Annual Report*. Washington, D.C.: CLR, 1970-1982.

10. U.S. Office of Education. Office of Libraries and Learning Resources. *Federal Programs for Libraries: A Directory*. Washington, D.C.: HEW, 1979.

11. U.S. Office of Education. Office of Libraries and Learning Resources. *Directory of Library Research and Demonstration Projects-1966-1975*. Washington, D.C.: HEW, 1978.

12. Tauber, Maurice F. "Introduction." *Library Trends* 6(Oct. 1957):106.

13. Shera, Jesse H. "Research and Developments in Documentation." *Library Trends* 6(Oct. 1957):187-206.

14. Dane, Chase. "A Proposal for Coordinating Library Research." *Library Trends* 6(Oct. 1957):247-53.

15. Garrison, Guy. "Introduction." *Library Trends* 13(July 1964):4; and Carnovsky, Leon. "Publishing the Results of Research in Librarianship." *Library Trends* 13(July 1964):127.

16. Ferguson, "Disseminating Library and Information Science Research."

17. Janaske, "Federally Funded Research," p. 102.

18. Slanker, Barbara O. "Research in Library Science: An Overview." *Illinois Libraries* 60(May 1978):449-54.

19. Whitbeck, et al., "Funding Support for Research."

20. Ibid., pp. 198, 207.

21. Garrison, Guy. "A Look at Research on Public Library Problems in the 1970s." *Public Libraries* 19(Spring 1980):4-8.

22. Cuadra Associates, *A Library and Information Science Research Agenda*, vol. 1, p. 9.

23. _____ . *A Library and Information Science Research Agenda*, vol. 2, Appendix C-6-7.

24. Ibid., vol. 2, Appendix C-6.

25. Ibid., vol. 2, Appendix C-3-4.

26. Shera, Jesse H. "Darwin, Bacon, and Research in Librarianship." *Library Trends* 13(July 1964):142.

27. Atherton, Pauline. "Research in Information Science: An Assessment." In *Perspectives in Information Science*, edited by Anthony Debons and William J. Cameron, pp. 665-83. Leyden, The Netherlands: Noordhoff, 1975.

28. Coughlin, Caroline, and Snelson, Pamela. "Searching for Research in ACRL Conference Papers." *The Journal of Academic Librarianship* 9(March 1983):21-26.

29. "Higher Education Act, Title II-B, Library Research and Demonstration Program." *Bowker Annual of Library and Book Trade Information* (1975-83); "Libraries and Learning Resources, Office of." *ALA Yearbook* (1976-80); and "Libraries and Learning Technologies, Office of." *ALA Yearbook* (1981-83).

30. Klassen, Robert. "Libraries and Learning Resources, Office of." *ALA Yearbook* (1977), p. 188.

31. Janaske, "Federally Funded Research."

32. Garrison, "A Look at Research," p. 6.

33. Carter, Yvonne B. "Higher Education Act, Title II-B, Library Research and Demonstration Program." *Bowker Annual of Library and Book Trade Information* (1984), pp. 247-49.

34. Burchinal, Lee. "National Science Foundation Announces R&D Program for National Coordination of Science and Technical Information and Seeks Proposals for Dissemination and Use of STI." *Information News and Sources, Pt. 1.* (NSF Grants and Contracts Published by Science Associates/International.) 6(Nov. 1974):257, 263.

35. "National Science Foundation Support for Research in Information Science and Technology." *Bowker Annual of Library and Book Trade Information* (1977-84); and "Research." *ALA Yearbook* (1976-83).

36. Atkinson, Hugh. "Research." *ALA Yearbook* (1980), p. 272.

37. "National Library of Medicine." *Bowker Annual of Library and Book Trade Information* (1978-84); and "Research." *ALA Yearbook* (1977-83).

38. Williams, Martha E. "Information Science Research, the National Library of Medicine and the Public/Private Sectors." *Online Review* 6(June 1982):253-61.

39. Council on Library Resources. *15th Annual Report.* Washington, D.C.: CLR, 1971, p. 7.

40. Carnovsky, Leon. "C.L.R.: A Review of the Work of the Council on Library Resources." *Library Journal* 86(15 Dec. 1961):4229.

41. Council on Library Resources. *20th Annual Report.* Washington, D.C.: CLR, 1976, p. 35.

42. Council on Library Resources. *Annual Report* (1970-82); "Council on Library Resources." *Bowker Annual of Library and Book Trade Information* (1978-83).

43. Rosenberg, Jane A. "Council on Library Resources." *Bowker Annual of Library and Book Trade Information* (1983), pp. 194-202.

44. Gwinn, Nancy E. "Council on Library Resources." In *Bowker Annual of Library and Book Trade Information.* New York: Bowker, 1981, p. 158.

45. Wilson, Pauline. "Barriers to Research in Library Schools: A Framework for Analysis." *Journal of Education for Librarianship* 17(Summer 1976):3-19.

46. Hewitt, Joe A. "Research on Bibliographic Control." *The Bookmark,* nos. 51/52, p. 102.

47. Hewitt, "Research on Bibliographic Control," pp. 108-09.

48. Hannigan, Jane. "Vision to Purpose to Power: A Quest for Excellence in the Education of Library and Information Science Professionals" (Submitted to the Department of Education, Washington, D.C., 1983) (unpublished).

49. Lynch, Mary Jo. "Financing Research on Library Effectiveness: A Report of a Very Informal Survey: American Library Association" (unpublished paper, n.d.).

50. Janaske, "Federally Funded Research," p. 110.

Publishing of Research in Librarianship

ROSE MARY MAGRILL

RESEARCH, WHETHER DEFINED simply as a systematic search for new knowledge or as the application of the scientific method to test a relationship, builds on what is already known. As the knowledge base of a field increases, the amount of publication of and about research in the field will presumably grow at a comparable rate. The maturity of any field of study is judged by the research activity that it supports. The extent of the field's research productivity is determined from the published record of that research; therefore, it is common to assess progress in a field of study through an evaluation of the quality and quantity of its published research. This paper, while not an evaluation of the quality and quantity of the published research in librarianship, will facilitate such evaluation by reviewing the most conspicuous trends during the past twenty years in the publishing of information about research in librarianship in the United States and the publishing of the results of the research itself.

Since scientific research builds on previous research, the system of communication among researchers is very important to the development of a field. The National Enquiry into Scholarly Communication, which issued a report on publishing and communication patterns in the social sciences and the humanities in 1979, identified seven "characteristics of an effective system of scholarly communication, applicable to all disciplines."[1] The first three characteristics seem appropriate points to consider in connection with the discussion of research in librarianship:

Rose Mary Magrill is Professor of Library and Information Sciences, North Texas State University, Denton, Texas.

1. *Access.* Readers should have access to a comprehensive bibliographic system that allows them to identify and locate material and to obtain it at a reasonable cost and without excessive delay.
2. *Entry.* Authors should find a variety of book publishers and journal editors willing to give a manuscript a fair reading and committed to a decision based on scholarly merit.
3. *Quality control.* The system should have the capacity to differentiate between works of greater and lesser quality, of greater and lesser importance, and to match the form of publication to these differences.[2]

Access

Bibliographies and Indexes

If we accept the National Enquiry's requirement that an effective system of scholarly communication provides a comprehensive bibliographic system that allows researchers to identify and locate material promptly, then scholarly communication in librarianship is probably adequate, but not outstanding. The person who wants to locate research reports in the literature of librarianship may start with one of the three standard indexing services in the field—*Library Literature, Information Science Abstracts (ISA),* or *Library and Information Science Abstracts (LISA). Library Literature* indexes—by author and subject—journal articles, books, pamphlets, microforms, library school theses, and research papers. *ISA* offers classified indexing and title keyword indexing of journal articles, conference proceedings, technical reports, NTIS and ERIC documents and books. Only *Library Literature* is not currently available in an online version. *LISA* covers books, theses, reports, periodicals, and conference proceedings, as well as selected NTIS (National Technical Information Service) abstracts. Obviously, neither indexing service focuses on research exclusively, and the brief citations in *Library Literature* make it difficult to identify research reports. The abstracts in *LISA* and *ISA* ordinarily provide enough information to determine if the entry represents a research report. Both abstracting services, however, have the disadvantage of providing slower coverage than *Library Literature*—e.g., many of the items cited in the first printed issues in 1984 of *LISA* and *ISA* were published in 1982 or earlier.

A major development in the bibliographic control of research in librarianship was the establishment in 1966 of a Clearinghouse for Library and Information Sciences (now Clearinghouse for Information Resources) as a part of the Educational Resources Information Center (ERIC), sponsored and financed by the United States Office of Educa-

tion. ERIC was created to improve the national dissemination of educational resources and research-related materials and to provide bibliographic control of government-funded research reports. Reports and other documents accepted by an ERIC clearinghouse are abstracted in the monthly issues of *Resources in Education,* and many of the documents are available from the ERIC Document Reproduction Service in microfiche or paper copy. Certainly, not all of the documents included in the ERIC database represent scientific research, but a person with a research idea can often find relevant literature there.

Another research-oriented bibliographic service, designed to report "the more signinfant research, experimentation, and innovative efforts underway in the field," was launched from the University of Maryland in 1971 but ceased in 1975.[3] *Library and Information Science Today; An International Register of Research and Innovation,* more often cited as *LIST,* was published in annual volumes, first by Science Associates/International and then by Gale Research.

The Library Association in Great Britain recently expanded the coverage of its *RADIALS Bulletin* and renamed it *CURRENT RESEARCH in Library & Information Science* (1983-). Research in progress is reported in a faceted classification scheme, and research for doctoral theses, research grants and projects is included. This reporting service offers information transfer in the purest sense, for as is explained on the inside cover: "The Library Association hopes that, through the information provided in *CURRENT RESEARCH,* librarians, information scientists, archivists and documentalists will find that research can provide answers to everyday problems; that the freer access to this knowledge afforded by international coverage will generate new ideas and solutions of benefit to all.

Dissertations in librarianship are well-covered bibliographically. The *Journal of Education for Librarianship* has attempted since 1968 to provide a list of dissertation topics accepted in library and information science. The database of active dissertations is available for computerized searching upon request to the editor of the "Research Record" column. An annual list of graduate theses—master's as well as doctoral—accepted by library schools in the United States became a feature of *Library Quarterly* in 1950. The last two lists of theses appearing in *Library Quarterly* have cumulated reports for a three-year period. Charles Davis has produced a listing of 915 dissertations accepted by universities contributing information to the "Research Record" column of the *Journal of Education for Librarianship;*[4] while Gail Schlachter and Dennis Thomison have compiled two annotated bibli-

ographies of library science dissertations, one covering 660 dissertations (1925-72) and the other 1000 dissertations (1973-81).[5] Library science dissertations,and dissertations written in other fields whose contents have a bearing on library science—e.g., often history, education, communications—are also covered in *Dissertation Abstracts International.*

Bibliographies of library-based research, both annotated and unannotated and review articles on research reports appear from time to time as journal articles and as monographs. Examples of separately-published bibliographies are the biblography on American library history compiled by Michael Harris and Donald Davis and the annotated bibliography on research in children's literature by Diane Monson and Bette Peltola. [6] Bohdan Wynar published in 1971 a bibliographic guide to research methods in library science, with topical outlines for each chapter.[7] Charles Busha, who included a bibliographic guide with his reader on library science research published in 1981, emphasized that "literature *about* research in librarianship remains meager—despite the growing necessity for librarians and information specialists to collect and analyze various empirical data."[8] Shirley Fitzgibbons's recent review article covering research on library services for children and young adults is a good example of the type of review article found in journals.[9] It follows in the tradition of Marion Gallivan's annotated bibliography on research in children's services, and Marilyn Shontz's review of research related to children's and young adult services in public libraries, both published in *Top of the News.*[10] *School Library Media Quarterly* has also provided bibliographic reviews, publishing comprehensive articles on research related to school librarianship in 1972, 1977 and 1982.[11]

Research-Alert Columns

Keeping busy librarians informed about the most important and relevant research being conducted in their special fields is a problem that has been widely recognized. Several journals have answered the challenge by publishing regular columns designed to alert readers to recent research.

School Libraries (continued as *School Media Quarterly*; now *School Library Media Quarterly*) published its first column on "Current Research" in 1959, when Mary V. Gaver became research editor of the journal. The column, designed to be "a real reservoir of material of *potential* help to the practicing school librarian,"[12] appeared in almost every issue of *School Libraries* through 1967. Occasional columns

appeared from 1970 to 1972, when *School Media Quarterly (SLMQ)* replaced *School Libraries*. In fall 1976, Shirley Aaron became research editor of *SLMQ* and "Current Research" has appeared regularly since that issue.

The *Journal of Education for Librarianship (JEL)* started a "Review of Current Research," edited by Sidney Jackson, in the spring issue of 1964. The purpose of the column was announced in the next issue: "One major reason for conducting this new department is that it may help us to find out what is going on....Another function implicit in the establishment of this department is the encouragement of needed research."[13] Almost every issue of *JEL* since 1964 has carried the research column. It was edited from 1968 through 1972 by Guy Garrison, from 1973 through 1982 by Charles H. Davis, and is now edited by Gerald W. Lundeen.

The *PLA Newsletter*, continued as *Public Libraries*, started a "Research in Action" column in the fall issue of 1977. Originally edited by Mary Grace Donnelly and written by various researchers, the column continues under the editorship of Linda Lucas. In addition to "Research in Action," *Public Libraries* also published from 1979 through 1981 a column of "Reports from ERIC," with abstracts selected by Bernard Lukenbill. *RQ* carried a "Research in Reference" column from the fall issue of 1968 through the summer issue of 1970; all but one of the columns was written by Charles Bunge.

Annual Reviews

One important development of the past twenty years has been the appearance of annual reviews of research activity in library science. The *ALA Yearbook*, first published in 1976 with a review of the library events of 1975, contained an article on "Research" by Barbara Slanker. Each yearbook since then has contained a similar article, although authorship has changed from year to year. Coverage has varied slightly through the years, but generally information on research grants by agencies of the federal government and notes on important research projects have been included. Beginning with the twenty-fifth edition, published in 1979, the *Bowker Annual of Library and Book Trade Information* has included an overview on research in libraries and librarianship, prepared by Mary Jo Lynch.

Although *Advances in Librarianship* does not focus exclusively on research and does not carry annual research review articles or individual research reports, it has included several useful contributions to the literature about research in librarianship. Examples are the review of

library history by David Kaser and the article on funding of research by George Whitbeck, Jean Major and Herbert White.[14]

Though it has a different publisher than *Advances in Librarianship,* the *Annual Review of Information Science and Technology (ARIST)* might be termed a sister publication. *ARIST* is coordinated through ASIS and it consistently has featured reviews in four to five organizing themes: Planning Information Systems and Services, Basic Techniques and Technologies, Applications, the Profession, and Special Topics. Research articles may appear under any of these headings, but most frequently research is found under the first three.

Entry

Journals

According to the National Enquiry's criteria listed earlier, the effective scholarly communication system provides adequate and prompt research news and reports through the journals of the field. Librarianship presents a mixed picture when viewed against this criterion. Specialized journals have, in many cases, shown a definite movement toward extended coverage of research topics; but the treatment of reseach in the three most widely-circulated journals (*American Libraries, Library Journal* and *Wilson Library Bulletin*) has been inconsistent over the past twenty years.

Of the three general periodicals, *Library Journal* has probably devoted the smallest percentage of its pages to research reports or articles about research methods. With the exception of an occasional thoughtful piece such as Robert Muller's "The Research Mind in Library Education and Practice,"[15] *Library Journal* has not published many articles about conducting research. A number of *LJ* articles over the past twenty years have been reports of data-gathering projects; some may even have been reports of scientific research studies, but the popularized style of the report in *LJ* usually makes it impossible to evaluate the quality of the research.

The *Library Journal* summary of library news of the year noted in 1968 that library research was growing in importance and becoming of wider interest. This was attributed to the fact that 1968 was the second year of substantial government funding for library research. As a result of this, research studies on library problems were appearing and more were expected.[16] The *LJ* annual review for 1969 made these comments:

> Undoubtedly one of the areas of librarianship suffering most from the lack of "packaging" to make it really accessible to the working

> librarian is research, which is just beginning to proliferate....But too often the only way to find the tiny kernel of knowledge in a huge report is to read the whole thing, at unconscionable expenditure of time....[17]

The review went on to hint at the *LJ* editorial policy in regard to research:

> Although *LJ* can occasionally find the time and space to render the fat of a really important report into English, this function is largely just not being performed....[18]

The 1969 summary was the last *LJ* review of the year to use "Research" as a subheading.

In the late 1960s, the *Wilson Library Bulletin* published two substantial articles about research—one a review of "Significant Research Studies for Practicing Librarians" and the other a compilation of statements about needed research by twenty-five leaders in the field.[19]

American Libraries (AL) has done more than the other two to keep the subject of research before its readers. In the late 1960s, *AL* published several articles on writing proposals, getting research grants, and using the research that has already been completed. Since 1980 *AL* has given more regular attention to research. Several "Research Alerts" by the Director of the ALA Office for Research, Mary Jo Lynch, have highlighted recent research reports, and an irregular "Research and Reality" column by Herbert White carried more general comments about research methods and the uses of research until it ceased in 1982 for financial reasons.

In the 1964 issue of *Library Trends* devoted to "Research Methods in Librarianship," Leon Carnovsky noted the close relationship between the progress of research in a field and its professional journals and the condition of the relationship in librarianship:

> Research, of course, logically precedes the establishment of journals for reporting its results. Once the journals are established they require a steady flow of manuscripts; if the flow is sluggish the journals may have to suspend publication or change their character to become hospitable to articles of a descriptive or speculative sort, and this, in fact, is what has happened in the library field. It is doubtful if we can point to a single periodical whose major articles are devoted exclusively to reserach reports; once established, the journals go on, broadening their scope, and in the process compromising their emphasis on studies that qualify as original investigation. If the research interest dries up entirely, some journals may go out of existence, and those that remain will obviously lose the characteristic that led to their original creation.[20]

Since Carnovsky wrote, more than a dozen new journals have been started, aimed at a national or international audience of librarians within a particular specialty. Many of these journals have indicated in their announcements of editorial policy that they will be concerned with research in the field. *Cataloging & Classification Quarterly* (1980-) announced in its lead editorial that it would, among other things, "emphasize full-length research and review articles...."[21] To illustrate these good intentions, the first article of the first issue was a report of a classification research study. In the first issue of *Collection Building* (1978-), the editor pointed to the journal's subtitle—"Studies in the Development and Effective Use of Library Resources"—as an indication that it would publish research and would "also commission such studies, and award research grants."[22] Another journal in the same specialty, *Collection Management* (1978-) announced as its objectives, "the dissemination of information relating to the theories, practices, and research findings involved with the management of library collections."[23] In the 1975 inaugural issue, the editor of the *Journal of Academic Librarianship* announced: "We will feature the results of research studies."[24] According to the editor of the *Journal of Library Administration,* started in 1980: "Theoretical pieces, data-based studies, practical and didactic works, and case analyses should all find a home in the journal."[25] As the *Journal of Library History* shifted to new editorship and a new publisher in 1977, its commitment to research was emphasized: "Major articles will most often consist of carefully developed papers, reports, and essays based on original research and primary sources...."[26] Editorial policy stated in the first issue of *Public Library Quarterly* (1979-) pointed out: "Articles included will be as wide ranging as the public library world. Some will be research reports...."[27] While the lead editorial of *Behavioral & Social Sciences Librarian* (1979-) did not specifically mention research, the first article of the first issue was a review of published information transfer studies in the social and behavioral sciences 1974 through 1978.

One new journal, *Library Research* (1977-83), now titled *Library & Information Science Research* (1983-), was started with the specific aim of featuring the application of social science research methodologies to librarianship. The lead editorial announced:

> The Editors believe that much of the significant research currently being done is not adequately disseminated to the profession, that *Library Research* is needed to bring the results of that research to the attention of the library world, and that journal will encourage librar-

> ians to undertake research projects that will be important in leading to improved planning, management, and operation of libraries. We are convinced that research in librarianship, basic as well as applied, is growing, both in volume and in level of sophistication....[28]

Although all of the new journals cited indicated that they would give some attention to research, some journals have provided more research reports, reviews of research and discussions of methodology than others. As Carnovsky observed twenty years ago, no matter what the original editorial policy, journals change in character to accommodate the supply of manuscripts they receive. Only *Library & Information Science Research,* in line with its announced policy, has featured research exclusively.

Mention should also be made of one serial publication started in the past twenty years to feature research in librarianship that did not survive. In September 1972 the Graduate School of Library Science of the University of Illinois started a *Newsletter on Library Research* "designed to serve those who are active, concerned, or just interested in research in librarianship," with an announced emphasis on research methodology.[29] The *Newsletter* provided annotations of new books and articles on research methods, reports of unpublished research, news of organized research, suggestions for research, and occasional reviews of published research. Seventeen issues of the *Newsletter* appeared between September 1972 and September 1976, when it announced that it was ceasing publication.

Twenty years ago Carnovsky listed seven journals as outlets for library research: *American Documentation* (superseded by the *Journal of the American Society for Information Science*), *College & Research Libraries, Journal of Education for Librarianship, Library Quarterly, Library Resources & Technical Services, Library Trends,* and *Libri.* All of these journals appear to have continued the same editorial policies; but, of the seven journals named, *College & Research Libraries, Journal of the American Society for Information Science, Journal of Education for Librarianship,* and *Library Quarterly* probably publish more reports of scientific research than the others named.

Library Trends, with its theme issues, is not so much an outlet for research reports as a place to find research cited and summarized. *Library Trends* issues often include an article summarizing research on the theme of the article. Some issues have featured techniques that may be used in research (e.g., bibliometrics and systems analysis) and others, such as this issue, have simply reviewed the state of research in librarianship.

College & Research Libraries is directed toward the needs of academic librarians. Occasional articles discuss research methods, but reports of data-gathering or research projects appear frequently. Soon Kim and Mary Kim analyzed articles published in *College & Research Libraries* between 1957 and 1976 and identified the following trends: "Publications on college and research librarianship have become more quantitative. While some experimental/quasi-experimental studies have been reported, descriptive research, specifically survey research, continues to be most prevalent."[30] The Kims also noted an increased sophistication in data analysis during the second decade of their study period.

The *Journal of the American Society for Information Science (JASIS)* emphasizes theoretical and experimental articles on the various fields of documentation and information science. Some of the reports included in *JASIS* feature library-based research as do articles in other serial publications covering research in information science (*Proceedings of the ASIS Annual Meeting, Proceedings of the ASIS Mid-Year Meeting, Information Processing and Management* [formerly *Information Storage and Retrieval,* published by Pergamon, 1963-74], *Information Technology and Libraries [ITAL]* [formerly *Journal of Library Automation,* 1968-81, ALA], *Aslib Proceedings, Program* [the Library Association journal of library automation], *Journal of Librarianship* [an independent journal, Library Association Publishing], *Journal of Information Science* [North-Holland], and *Journal of Documentation [Library Association]*).

The Journal of Education for Librarianship focuses on library school programs—their curricula, teaching techniques, faculty, students, administration, alumni, employers, etc. The content of *JEL* has changed over the past twenty years in easily-observable ways. An inspection of issues from 1964-68, 1969-73, 1974-78, and 1979-83 reveals a steadily decreasing percentage of articles presenting opinions and proposals or descriptions of courses, programs, and teaching methods. During the same period, the percentage of articles with quantitative treatment of empirical data has increased. Articles appearing in *JEL* over the past five years have tended to be longer than in earlier years and give evidence of more sophisticated analysis of data.

The oldest of the journals emphasizing library research, *Library Quarterly* reflects the full range of research methods used to study library problems, from historical narrative to mathematical modeling. During the past twenty years, there appears to have been an increase in the proportion of the journal devoted to historical reports of one sort or

another and to surveys using empirical data. Literature reviews, theoretical discussions, bibliographies and other articles of that type have decreased in volume though it continues to be a source of commentary on the uses—good and ill—of statistical methods, sampling and research techniques.

Certain journals not mentioned in Carnovsky's article have given increasing attention to research over the past twenty years. *Top of the News,* a quarterly journal aimed at librarians working with children and young adults, has reported on surveys, published bibliographies of research studies, and provided several recent articles on research methods. *School Library Media Quarterly* has also featured articles on research and school librarianship in recent issues. The *Bulletin of the Medical Library Association* is another example of a specialized journal that includes articles on research methods, as well as reports of research projects.

State and regional journals feature research, from time to time, usually in the form of reviews of research or papers from a conference with a research focus.[32] In 1965-66, *Southeastern Librarian* ran a series of articles on the research being conducted at the library schools in the region.[33] In 1978 *Illinois Libraries* devoted an entire issue to short reports on "all of the major studies of Illinois libraries and librarians undertaken during the past several years."[34]

Monographs

In 1979 Patricia Schuman and Andrea Pedolsky identified "at least ten companies and organizations" that "devote a significant portion of their publishing programs to library science texts, anthologies, and other monographs."[35] A quick scanning of the current catalogs of these publishers (plus several others that have entered the field since then) indicates that most of the emphasis in library science monograph publishing is on bibliographies, other reference tools, and "how-to-do-it" manuals.

The American Library Association (ALA) probably provides more outlets for works of or about research than any of the commercial publishers. In addition to publication of individual reports on data-gathering projects and explanations of data-gathering techniques, ALA has two series—ALA Studies in Librarianship and ACRL Publications in Librarianship—that publish research reports. Scarecrow Press from time to time publishes library science dissertations and other research studies. Libraries Unlimited has a series called "Research Studies in Library Science," which has included in its list several individual

dissertations and two bibliographies of dissertations. Greenwood Press has published several dissertations in monograph form, as well as the results of other research studies. Publishing a mix of conference proceedings, reference books, library and information science textbooks, books on professional issues, and basic and applied research are JAI Press, K.G. Saur, Learned Information, North-Holland, Marcel Dekker, Elsevier, Wiley, and Academic. Ablex Publishing Corporation, only recently entering the field with its "Libraries and Librarianship Series," has already published two books based on dissertations and also publishes the journal *Library and Information Science Research.* Another relative latecomer to the field of library science publishing is Lexington Books, which, in its "Special Series in Libraries and Librarianship," has published the results of several descriptive studies of library policies and procedures.

Serving a need not fulfilled by either journal or monograph publishing are occasional papers series, such as the one published by the Graduate School of Library and Information Science at the University of Illinois, which publishes reports of original research and also reviews of research studies on a particular topic.

Textbooks and Readers

During the past twenty years, several textbooks and readers on research methods in librarianship have been published. The two textbooks with the broadest coverage are the ones by Herbert Goldhor (1972) and by Charles Busha and Stephen Harter (1980).[36] Both books stress the basic principles by which research in librarianship can be conducted, discuss commonly-used data collection techniques, and introduce the scientific method as an appropriate investigative approach to library problems. Busha and Harter also devote several chapters to statistical applications. A *Reader in Research Methods for Librarianship,* edited by Mary Lee Bundy and Paul Wasserman, was published in 1970; a *Reader in Operations Research for Libraries* followed in the same series in 1976.[37] Busha produced a library science research reader in 1981 with six essays and a bibliography of library science research (1931-79).[38]

Two other potential textbooks for the study of research methods in librarianship have narrower objectives than Busha and Harter or Goldhor. Jeffrey Katzer, Kenneth Cook and Wayne Crouch have produced a guide for evaluating social science research aimed at students in a variety of fields, including library science. Unlike most textbooks for research methods courses, *Evaluating Information* is written from a consumer's, rather than a producer's point of view.[39] A less comprehen-

sive approach to research methods is *Investigative Methods in Library and Information Science* by John Martyn and Wilfrid Lancaster, the purpose of which is "to describe straightforwardly the major investigative techniques relevant to research and evaluation in the fields of library and information services and to indicate the applications for which such techniques seem most appropriate."[40] A further contrast between this book and the others is indicated in the introduction: "*Investigative Methods* is more concerned with techniques that will give a manager insight into a situation than with techniques that will support a hypothesis."[41] *Investigative Methods* complements but does not supersede the earlier review of applied research and methodology by Lancaster, *The Measurement & Evaluation of Library Services* (Arlington, Va.: Information Resources Press, 1977).

Since scientific research usually involves statistical analysis, it is important to note that at least three introductory textbooks in statistics have been produced for librarians during the past ten years. In 1975 I.S. Simpson published the first edition of *Basic Statistics for Librarians*, intended to provide a simple, concise introduction to the essentials of statistics.[42] A second edition of this work, considerably expanded, was published in 1983. In 1977, Srikantaiah and Hoffman offered an introduction to quantitative research methods with what the authors called "a narrative, non-mathematical approach to research methodology, stressing logic and the reasoning underlying...the basic methods of quantitative research."[43] The American Library Association published in 1978 Ray Carpenter's book on statistical methods for librarians, designed "to give a basic understanding of statistics, statistical analysis, and its usefulness in library science."[44]

Conference Proceedings

Conference proceedings provide another outlet for reviews of research, discussions of research methods, and—in some cases—reports of research projects. The University of Illinois Graduate School of Library and Information Science sponsored conferences on research methods related to measurement and evaluation in 1967 and historical and bibliographic methods in 1970. Proceedings of both conferences were published.[45] The University of Illinois also publishes the proceedings of the Allerton Institutes, some of which include papers that assess the state of research in the specialty being featured that year. Like those of the Allerton institutes, the proceedings of the University of Illinois' Annual Clinic on Library Applications of Data Processing feature research reports relevant to the conferences' themes. Through Univer-

sity Microfilms International, the American Library Association's Library Research Round Table published the proceedings of its "Research Forums" at the 1977 ALA Conference.[46] This practice has not been continued, although audio tapes of the presentations are sold by ALA. Papers presented at the first (1978) annual conference of the Association of College and Research Libraries, were published in monograph form by K.G. Saur in 1979.[47] Papers presented at the second (1981) were published by JAI Press in 1982.

Other examples of relevant conference proceedings have been published in journals. The Thirty-Fifth Annual Conference of the Graduate Library School, University of Chicago, held in 1971, featured "Operations Research: Implications for Libraries"; proceedings were published in the January 1972, issue of *Library Quarterly*. The 1979 annual conference of the Association of American Library Schools focused on research. Several papers from that conference appeared in the fall 1979 issue of the *Journal of Education for Librarianship. College & Research Libraries* (May 1980) published three papers from a conference on "Library Research for Librarians" held at the University of North Carolina at Chapel Hill in March 1979. Another contribution from the University of North Carolina was the special 1982 issue of *The Bookmark*, containing lectures delivered at the fiftieth anniversary celebration of the School of Library Science—a celebration that emphasized research in librarianship, as well as developments in library education.

Dissertations

Although not examples of publishing in the conventional sense, doctoral dissertations—by custom the reports of original research—represent one of the basic sources of information about research in librarianship. Dissertations not only report in detail on individual research projects, but most also provide a review of relevant previous research.

Schlachter and Thomison, who crompiled two (previously-cited) bibliographies of library science dissertations, also analyzed the primary methodology used in dissertations they listed. Of the 660 dissertations in the earlier bibliography (1925-72), they found 44.2 percent to be survey research, 30.0 percent to be historical; and 4.0 percent to be experimental. More than half (56.1 percent) of the 1000 dissertations cited in the later bibliography (1973-81) were classified as surveys, and only 15.4 percent were historical. The percentage of dissertations classified as experimental had risen to 5.3 percent in the later list. The compilers concluded that library science dissertations were becoming

more quantitative in method. "Since 1972, only 16.8 percent (historical and theoretical papers) of the completed dissertations were clearly non-quantitative in design or analysis, compared to 32 percent between 1925 and 1972."[48] In the first bibliography (1925-72), the four universities responsible for the most dissertations were Chicago, Columbia, Illinois, and Michigan; in the second bibliography (1973-81), the top producers of doctoral dissertations in library science were Case Western Reserve, Florida State, Indiana, and Pittsburgh.

Quality Control

Earlier in this article, the suggestion was made that any effective scholarly communication system ought to have the capacity to provide judgments on the quality and importance of the work being produced in the field. Publishing of and about research in librarianship has increased in volume over the past twenty years and, to some extent, has improved in quality, but there is evidence that librarianship has not yet established effective quality-control procedures. Not all that purports to be research in librarianship can meet the standards of scientific research.

An example of this situation is furnished by the collection of papers given at the 1978 national conference of the Association of College and Research Libraries, a conference with an announced scholarly focus.[49] Caroline Coughlin and Pamela Snelson applied content analysis to these ACRL conference papers to determine the proportion that might deserve the adjectives "scholarly" and "scientific." "Scientific" was defined as "based on the scientific method," and "scholarly" was applied to "papers based on the research traditions of humanists."[50] Coughlin and Snelson found "of the 66 contributed papers in 1978 only 33.3 percent were research reports. A clear majority of the papers were not research reports. These include position papers, nonoriginal progress or status reports, and the ever present 'how we did good' paper."[51] The authors also note that "the findings do not change greatly when the 1981 conference papers are examined."[52]

Dissertation writers have attempted to find significant patterns in the research and publishing activity in librarianship. Brace analyzed the citations from 202 doctoral dissertations in library and information science, written between 1961 and 1970, and could not find a core group of authors or of research literature in the traditional sense.[53] Taking a sample of research papers published in certain basic journals of librarianship (1950-75), Peritz analyzed these to determine characteristics of authorship, content, method, and citation patterns.[54] Palmer also

looked at similar characteristics in a group of journal articles from law, library science, and social work, published 1965-74. Among his findings was this generalization: "Practice articles dominate the literature of library science (36.7 percent) and social work (48.6 percent) but trends indicate a shift in both fields to systematic research, especially in the form of empirical research."[55] Starting from an interest in how much the research reported in dissertations is really used, O'Connor took 1206 library science dissertations accepted from 1925 through 1975 and checked the degree to which they were cited, as recorded in *Social Sciences Citation Index*. She found that only 25.6 percent of the dissertations had been cited in a journal from 1970 through 1976.[56]

It is true that several library journals use referees to select manuscripts for publication and that efforts have been made in some journals—*Public Libraries*, *Top of the News*, and *School Library Media Quarterly*, for example—to provide nonresearch-oriented librarians with the highlights of important research studies relevant to their specialties. Few journals, however, provide the opportunity (or few librarians attempt to make the opportunity) for detailed, critical discussion of research already completed. The type of reactor panel used by the *Journal of Academic Librarianship* in the May 1979 issue to discuss the "Pittsburgh University Studies of Collection Usage" is one pattern that might be followed. The "Letters" sections of *College & Research Libraries* and the *Journal of the American Society for Information Science* are sometimes used to comment on previously-published research reports. In the January 1978 issue, the editor of *JASIS* specifically encouraged readers to make use of the "Letters to the Editor" column to engage in debate about the papers published in the journal. Wider use of the "Letters" section in other journals could be a significant move toward improving the quality of scholarly communication in library science.

Conclusions and Suggestions

The system for scholarly communication in librarianship has clearly improved over the past twenty years. In the first place, access to information is greater. Better bibliographic control of research reports has been provided by ERIC. Lists of dissertation topics are published in the *Journal of Education for Librarianship* before the research is completed and abstracts are provided within a reasonable period of time after completion in *Dissertaiton Abstracts International*. In the second place, authors of manuscripts based on research studies can usually find entries into the communication system. New journals have been started

with the avowed purpose of publishing research results; and established journals have, in some cases, begun to give more attention to research concerns. Monograph publishing still tends to emphasize manuals of practice rather than results of research projects, but some publishers provide outlets for the scholarly manuscript. Quality control of the scholarly communication in librarianship has not kept pace with the access and entry. This may be due, to some extent, to the fact that many librarians have not been trained to be critical consumers of research.

A major problem with the publishing of research in librarianship is that so small a proportion of librarians have the time or the inclination to follow it closely. Although this generalization is based on subjective impressions in regard to American librarians, there is evidence to support the contention in regard to British librarians. A study conducted in 1980 by Aslib found that only 4 percent of a sample of 854 representatives of the library-information profession in Great Britain felt really "well informed" about current research in their field.[57] More than 30 percent of the sample felt "not really really informed" about current research. One can only guess how a comparable sample in the United States might have responded.

Suggestions for reaching the nonresearch-oriented practitioner may be gleaned from the British study. Analysis of responses by type of employment produced this finding: "From a practical viewpoint of publicising and disseminating research, the market is...most usefully segmented by employer group. Different employment groups really would seem to have different research needs."[58] This generalization, combined with the finding that journals were preferred over other forms of publication emphasizes the importance of the research-alert columns and the comprehensive review articles found in some specialized journals.[59] Those librarians who are primarily consumers, rather than producers, of research could benefit from fewer popularized reports of isolated projects and more omnibus reviews of research on a particular topic. An important step in this direction would be the regular inclusion of a research article in any "theme issue" of a journal.

Not all librarians are indifferent toward research. Those who already engage in or would like to engage in research also have needs not fully met by the present communication system. More introductory and intermediate-level articles about research techniques would be useful. Those already engaged in research also need more opportunities to exchange ideas about possible research topics and appropriate methods for investigating library problems. The informality and potential timeliness of the newsletter format would be particularly appropriate for

this purpose. The "Research Notes" section in *College & Research Libraries,* which was started in 1981 to provide brief reports of selected current research, might well be adopted by other journals serving other specialties. Columns that highlight important unpublished dissertations or that identify the research reports hidden in ERIC would be equally useful.

References

1. *Scholarly Communication; The Report of the National Enquiry.* Baltimore, Md.: Johns Hopkins University Press, 1979, p. 7.

2. Ibid.

3. Wasserman, Paul, and Daniel, Evelyn. "The Birth of *LIST*." *Library Journal* 95(15 Nov. 1970):3879.

4. Davis, Charles H. *Library Science; A Dissertation Bibliography.* Ann Arbor, Mich.: University Microfilms International, 1980.

5. Schlachter, Gail A., and Thomison, Dennis. *Library Science Dissertations, 1925-1972; An Annotated Bibliography.* Littleton, Colo.: Libraries Unlimited, 1974; and _____. *Library Science Dissertations, 1973-1981; An Annotated Bibliography.* Littleton, Colo.: Libraries Unlimited, 1982.

6. Harris, Michael H., and Davis, Donald G., Jr. *American Library History; A Bibliography.* Austin: University of Texas Press, 1978; and Monson, Diane L., and Peltola, Bette J. *Research in Children's Literature: An Annotated Bibliography.* Newark, Del.: International Reading Association, 1976.

7. Wynar, Bohdan S. *Research Methods in Library Science; A Bibliographic Guide with Topical Outlines.* Littleton, Colo.: Libraries Unlimited, 1971.

8. Busha, Charles H. *Library Science Research Reader and Bibliographic Guide.* Littleton, Colo.: Libraries Unlimited, 1981.

9. Fitzgibbons, Shirley G. "Research on Library Services for Children and Young Adults: Implications for Practice." *Emergency Librarian* 9(May-June 1982):6-17.

10. Gallivan, Marion F. "Research on Children's Services in Libraries; An Annotated Bibliography." *Top of the News* 30(April 1974):275-93; and Shontz, Marilyn Louise. "Selected Research Related to Children's and Young Adult Services in Public Libraries." *Top of the News* 38(Winter 1982):125-42.

11. Aaron, Shirley L. "A Review of Selected Research Studies in School Librarianship, 1967-71: Part I." *School Libraries* 21(Summer 1972):29-46; _____. "A Review of Selected Research Studies in School Librarianship, 1967-71: Part II." *School Media Quarterly* 1(Fall 1972):41-48; Barron, Daniel D. "A Review of Selected Research in School Librarianship: 1972-1976." *School Media Quarterly* 5(Summer 1977):271-76, 281-89; and Aaron, Shirley L. "A Review of Selected Doctoral Dissertations about School Library Media Programs and Resources, January 1972-December 1980." *School Library Media Quarterly* 10(Spring 1982):210-40, 245.

12. "Current Research." *School Libraries* 9(Oct. 1959):42.

13. Jackson, Sidney L. "Review of Current Research." *Journal of Education for Librarianship* 5(Summer 1964):76.

14. Kaser, David. "Advances in American Library History." In *Advances in Librarianship,* vol. 8, edited by Michael H. Harris, pp. 181-99. New York: Academic Press, 1978; and Whitbeck, George W., et al. "Funding Support for Research in Librarianship." In *Advances in Librarianship,* vol. 9, edited by Michael H. Harris, pp. 185-209. New York: Academic Press, 1979.

15. Muller, Robert H. "The Research Mind in Library Education and Practice." *Library Journal* 92(15 March 1967):1126-29.

16. "News Report: 1968." *Library Journal* 94(1 Jan. 1969):29-36.

17. "News Report: 1969." *Library Journal* 95(1 Jan. 1970):37-38.

18. Ibid.

19. Gaver, Mary V. "Is Anybody Listening? Significant Research Studies for Practicing Librarians." *Wilson Library Bulletin* 43(April 1969):764-72; and "A Kaleidoscopic View of Library Research." *Wilson Library Bulletin* 41(May 1967):896-949.

20. Carnovsky, Leon. "Publishing the Results of Research in Librarianship." *Library Trends* 13(July 1964):126-27.

21. Cook, C. Donald. "Editorial." *Cataloging & Classification Quarterly* 1(Fall 1980):2.

22. Curley, Arthur. "Editorial." *Collection Building* 1(1978):6.

23. Trueswell, Richard W. "Editorial." *Collection Management* 1(1978):5.

24. Dougherty, Richard M. "Editorial: Uncertain Times." *Journal of Academic Librarianship* 1(March 1975):3.

25. Lederer, Norman. "From the Editor." *Journal of Library Administration* 1(Spring 1980):1.

26. Davis, Donald G., Jr. "Editorials: A Look Forward." *Journal of Library History* 12(Winter 1977):2.

27. Prentice, Ann E. "Editorial." *Public Library Quarterly* 1(Spring 1979):3.

28. Voigt, Melvin J. "Editorial." *Library Research* 1(1979):i.

29. "A Note form the Editors." *Newsletter on Library Research* 1(1972):1.

30. Kim, Soon D., and Kim, Mary T. "Academic Library Research: A Twenty Year Perspective." In *New Horizons for Academic Libraries* (Papers Presented at the First National Conference of the Association of College and Research Libraries, Boston, Massuchusetts, 8-11 Nov. 1978), edited by Robert D. Stueart and Richard D. Johnson, p. 382. New York: K.G. Saur, 1979.

31. Van de Water, Nancy, et al. "Research in Information Science: An Assessment." *Information Processing and Management* 12(no. 2, 1976):117.

32. Coombs, Donald. "Current Library Research in California." *California Librarian* 35(Oct. 1974):5-11; _____ . "Current Library Research in California—1975." *California Librarian* 37(July 1976)53-60; _____ . "Current Library Research in California—1976" *California Librarian* 38(July 1977):53-59; Robinson, William C. "Research Methods, Reporting, and the Librarian." *Tennessee Librarian* 33(Fall 1981):25-31; Purcell, Gary R. "The Research Role of the Librarian." *Utah Libraries* 19(Spring 1976):34-38; Taylor, John R. "A Scientific Approach to Library Research." *Utah Libraries* 19(Spring 1976):39-42; Mogren, Paul A. "A Humanistic Approach to Library Research." *Utah Libraries* 19(Spring 1976):43-47; and Marchant, Maurice P. "Research: How to Get There from Here." *Utah Libraries* 19(Spring 1976):48-50.

33. Carpenter, Ray L., Jr. "Current Research at the School of Library Science University of North Carolina." *Southeastern Librarian* 15(Spring 1965):19-20, 46; Clemons, John, and Jahoda, Gerald. "Research Activities at the Florida State University Library School." *Southeastern Librarian* 15(Summer 1965):63-68; Cheney, Frances Neel. "Research Activity at the Peabody Library School." *Southeastern Librarian* 15(Winter 1965):200-02; Reagan, Agnes L. "Recent Research in the Division of Librarianship, Emory University." *Southeastern Librarian* 16(Spring 1966):27-31; Martin, Laura K. "Research Activity at the University of Kentucky, Department of Library Science." *Southeastern Librarian* 16(Summer 1966):103-06; and Jones, Virginia L. "Research at Atlanta University's School of Library Services." *Southeastern Librarian* 16(Fall 1966):161-63.

34. Rike, Galen, and Tyler, Travis E. "Current Research Pertaining to Illinois Libraries and Librarians." *Illinois Libraries* 60(May 1978):447.

35. Schuman, Patricia Glass, and Pedolsky, Andrea. "Publishers of Library Science Books and Monographs." *Drexel Library Quarterly* 15(Jan. 1979):77.

36. Goldhor, Herbert. *An Introduction to Scientific Research in Librarianship*. Urbana-Champaign: University of Illinois Graduate School of Library Science, 1972; Busha, Charles H., and Harter, Stephen P. *Research Methods in Librarianship: Techniques and Interpretation*. New York: Academic Press, 1980.

37. Bundy, Mary Lee, and Wasserman, Paul. *Reader in Research Methods for Librarianship*. Washington, D.C.: Microcard Editions, 1970; Brophy, Peter, et al. *Reader in Operations Research for Libraries*. Englewood, Colo.: Information Handling Services, 1976.

38. Busha, *Library Research Reader and Bibliographic Guide*.

39. Katzer, Jeffrey, et al. *Evaluating Information; A Guide for Users of Social Science Research*. Reading, Mass.: Addison-Wesley Publishing Co., 1978.

40. Martyn, John, and Lancaster, F. Wilfrid. *Investigative Methods in Library and Information Science: An Introduction*. Arlington, Va.: Information Resources Press, 1981, p. iii.

41. Ibid., p. 3.

42. Simpson, I.S. *Basic Statistics for Librarians*. Hamden, Conn.: Shoe String Press, 1975; and _____. *Basic Statistics for Librarians*, 2d ed. Hamden, Conn.: Shoe String Press, 1983.

43. Srikantaiah, Taverekere, and Hoffman, Herbert H. *An Introduction to Quantitative Research Methods for Librarians*, 2d ed. Santa Ana, Calif.: Headway Publications, 1977.

44. Carpenter, Ray L., Jr. *Statistical Methods for Librarians*. Chicago: ALA, 1978, p. xiii.

45. *Research Methods in Librarianship: Measurement and Evaluation* (Papers Presented at a Conference Conducted by the University of Illinois, Graduate School of Library Science, 10-13 Sept. 1967), edited by Herbert Goldhor. Urbana-Champaign: University of Illinois Graduate School of Library Science, 1968; and *Research Methods in Librarianship: Historical and Bibliographic Methods in Library Research* (Papers Presented at a Conference held at the Graduate School of Library Science, University of Illinois, 1-4 March 1970), edited by Rolland Stevens. Urbana-Champaign: University of Illinois Graduate School of Library Science, 1971.

46. American Library Association. Library Research Round Table. *Library Research Round Table: 1977 Research Forums: Proceedings* (Meetings Held at the 96th Annual Conference of the American Library Association, Detroit, Mich., 17-23 July 1977), edited by Charles C. Curran. Ann Arbor, Mich.: University Microfilms International, 1979.

47. Stueart, Robert D., and Johnson, Richard D., eds. *New Horizons for Academic Libraries* (Papers Presented at the First National Conference of the Association of College and Research Libraries, Boston, Mass., 8-11 Nov. 1978), edited by Robert E. Stueart and Richard D. Johnson. New York: K.G. Saur, 1979; and *Options for the 80's* (Proceedings of the Second National Conference of the Association of College and Research Libraries), edited by Michael D. Kathman and Virgil F. Massman. Greenwich, Conn.: JAI Press, 1982.

48. Schlachter, and Thomison, *Library Science Dissertations, 1973-1981*, p. 376.

49. Stueart, and Johnson, eds., *New Horizons for Academic Libraries*.

50. Coughlin, Caroline, and Snelson, Pamela. "Searching for Research in ACRL Conference Papers." *Journal of Academic Librarianship* 9(March 1983):21.

51. Ibid., p. 23.

52. Ibid.

53. Brace, William. "A Citation Analysis of Doctoral Dissertations in Library and Information Science, 1961-1970." Ph.D. diss., Case Western Reserve University, 1975.

54. Peritz, Bluma Cheila. "Research in Library Science as Reflected in the Core Journals of the Profession: A Quantitative Analysis (1950-1975)." Ph.D. diss., University of California at Berkeley, 1977.

55. Palmer, Roger Cain. "Contributor Affiliation and Nature of Contributor Content in U.S. Journal Articles from the Fields of Law, Library Science, and Social Work, 1965-1974." Ph.D. diss., University of Michigan, 1978.

56. O'Connor, Mary Alice. "Dissemination and Use of Library Science Dissertations in the Periodicals Indexed in the *Social Sciences Citation Index*." Ph.D. diss., Florida State University, 1978.

57. Lynam, Peter, et al. *Research and the Practitioner; Dissemination of Research Results within the Library-Information Profession.* London: Aslib, 1982, pp. 10-11.

58. Ibid.

59. Ibid.

This Page Intentionally Left Blank

VOLUME 32

SUMMER 1983—SPRING 1984

This Page Intentionally Left Blank

Index to Volume 32

Prepared by: MARY KELLY BLACK

C

D

E

R

S

Partial List of Library Trends Issues in Print*

				Title	*Editor*	*Date*
V	11	N.	1	Library Boards	J. Archer Eggen	July 1962
	11		2	Bibliotherapy	Ruth M. Tews	Oct 1962
	11		3	Law Libraries	Bernita J Davies	Jan. 1963
	11		4	Financial Administration of Libraries	Ralph H. Parker Paxton P Price	April 1963
V.	12	N.	1	Public Library Service to Children	Winifred C. Ladley	July 1963
	12		2	Education for Librarianship Abroad in Selected Countries	Harold Lancour J. Clement Harrison	Oct. 1963
	12		3	Current Trends in Reference Services	Margaret Knox Goggin	Jan 1964
	12		4	European University Libraries: Current Status and Developments	Robert Vosper	April 1964
V.	13	N.	1	Research Methods in Librarianship	Guy Garrison	July 1964
	13		2	State and Local History in Libraries	Clyde Walton	Oct. 1964
	13		3	Regional Public Library Systems	Hannis S. Smith	Jan. 1965
	13		4	Library Furniture and Furnishings	Frazer G. Poole	April 1965
V.	14	N.	1	Metropolitan Public Library Problems Around the World	H.C. Campbell	July 1965
	14		2	Junior College Libraries	Charles L. Trinkner	Oct. 1965
	14		3	Library Service to Industry	Katharine G. Harris Eugene B. Jackson	Jan. 1966
	14		4	Current Trends in Branch Libraries	Andrew Geddes	April 1966
V	15	N	1	Government Publications	Thomas S. Shaw	July 1966
	15		2	Collection Development in University Libraries	Jerrold Orne	Oct. 1966
†	15		3	Bibliography Current State and Future Trends Part 1	Robert B Downs Frances B Jenkins	Jan. 1967
†	15		4	Bibliography. Current State and Future Trends Part 2	Robert B. Downs Frances B Jenkins	April 1967
V	16	N	1	Cooperative and Centralized Cataloging	Esther J. Piercy Robert L Talmadge	July 1967
	16		2	Library Uses of the New Media of Communication	C. Walter Stone	Oct. 1967
	16		3	Abstracting Services	Foster E. Mohrhardt	Jan. 1968
	16		4	School Library Services and Administration at the School District Level	Sara K. Srygley	April 1968
V	17	N.	1	Group Services in Public Libraries	Grace T. Stevenson	July 1968
	17		2	Young Adult Service in the Public Library	Audrey Biel	Oct. 1968
	17		3	Development in National Documentation and Information Services	H.C. Campbell	Jan. 1969
	17		4	The Changing Nature of the School Library	Mae Graham	April 1969
V.	18	N.	1	Trends in College Librarianship	H. Vail Deale	July 1969
	18		2	University Library Buildings	David C. Weber	Oct. 1969
	18		3	Problems of Acquisition for Research Libraries	Rolland E Stevens	Jan. 1970
	18		4	Issues and Problems in Designing a National Program of Library Automation	Henry J. Dubester	April 1970
V.	19	N.	1	Intellectual Freedom	Everett T. Moore	July 1970
	19		2	State and Federal Legislation for Libraries	Alex Ladenson	Oct. 1970
	19		3	Book Storage	Mary B. Cassata	Jan. 1971
	19		4	New Dimensions in Educational Technology for Multi-Media Centers	Philip Lewis	April 1971
V	20	N.	1	Personnel Development and Continuing Education in Libraries	Elizabeth W. Stone	July 1971
	20		2	Library Programs and Services to the Disadvantaged	Helen H Lyman	Oct. 1971
	20		3	The Influence of American Librarianship Abroad	Cecil K. Byrd	Jan. 1972
	20		4	Current Trends in Urban Main Libraries	Larry Earl Bone	April 1972
V	21	N.	1	Trends in Archival and Reference Collections of Recorded Sound	Gordon Stevenson	July 1972
	21		2	Standards for Libraries	Felix E. Hirsch	Oct. 1972
	21		3	Library Services to the Aging	Eleanor Phinney	Jan. 1973
	21		4	Systems Design and Analysis for Libraries	F Wilfrid Lancaster	April 1973
V.	22	N.	1	Analyses of Bibliographies	H R. Simon	July 1973
	22		2	Research in the Fields of Reading and Communication	Alice Lohrer	Oct. 1973
	22		3	Evaluation of Library Services	Sarah Reed	Jan. 1974
	22		4	Science Materials for Children and Young People	George S. Bonn	April 1974

Partial List of Library Trends Issues in Print*

				Title	Editor	Date
V.	23	N.	1	Health Sciences Libraries	Joan Titley Adams	July 1974
	23		2	Library Services in Metropolitan Areas	William S. Budington	Oct. 1974
	23		3	Music and Fine Arts in the General Library	Guy A. Marco Wolfgang M. Freitag	Jan. 1975
	23		4	Resource Allocation in Library Management	H. William Axford	April 1975
V.	24	N.	1	Federal Aid to Libraries	Genevieve M. Casey	July 1975
	24		2	Library Cooperation	Pearce S. Grove	Oct. 1975
	24		3	Community Analysis and Libraries	Larry Earl Bone	Jan. 1976
	24		4	Commercial Library Supply Houses	Harold Roth	April 1976
V. †	25	N.	1	American Library History: 1876-1976	Howard W. Winger	July 1976
	25		2	Employee Organizations and Collective Bargaining in Libraries	Margaret A. Chaplan	Oct. 1976
	25		3	Trends in Bibliographic Control: International Issues	Mary Ellen Soper Benjamin F. Page	Jan. 1977
	25		4	Trends in the Scholarly Use of Library Resources	D.W. Krummel	April 1977
V.	26	N.	1	Library Services to Correctional Facilities	Jane Pool	Sum. 1977
	26		2	Trends in the Governance of Libraries	F. William Summers	Fall 1977
	26		3	Institution Libraries	Harris C. McClaskey	Win. 1978
	26		4	Publishing in the Third World	Philip G. Altbach Keith Smith	Sprg. 1978
V.	27	N.	1	Films in Public Libraries		Sum. 1978
	27		2	State Library Development Agencies	John A. McCrossan	Fall 1978
	27		3	Libraries and Society	Phyllis Dain Margaret F. Stieg	Win. 1979
	27		4	Study and Collecting of Historical Children's Books	Selma K. Richardson	Sprg. 1979
V.	28	N.	1	Economics of Academic Libraries	Allen Kent Jacob Cohen K. Leon Montgomery	Sum. 1979
	28		2	Emerging Patterns of Community Service	Margaret Monroe Kathleen M. Heim	Fall 1979
	28		3	Library Consultants	Ellsworth E. Mason	Win. 1980
	28		4	Current Trends in Rural Public Library Service	John M. Houlahan	Sprg. 1980
V.	29	N.	1	Current Library Use Instruction	A.P. Marshall	Sum. 1980
	29		2	Library Services to Ethnocultural Minorities	Leonard Wertheimer	Fall 1980
	29		3	Map Librarianship and Map Collections	Mary Lynette Larsgaard	Win. 1981
	29		4	Public Lending Right	Perry D. Morrison	Sprg. 1981
V.	30	N.	1	Bibliometrics	William Gray Potter	Sum. 1981
	30		2	Conservation of Library Materials	Gerald Lundeen	Fall 1981
	30		3	Data Libraries for the Social Sciences	Kathleen M. Heim	Win. 1982
	30		4	Mental Health Information: Libraries and Services to the Patient	Phyllis Rubinton	Sprg. 1982
V.	31	N.	1	Standards for Library and Information Services	Terry L. Weech	Sum. 1982
	31		2	Technical Standards for Library and Information Science	James E. Rush	Fall 1982
	31		3	Current Trends in Reference Services	Bernard Vavrek	Win. 1983
	31		4	Adult Learners, Learning and Public Libraries	Elizabeth J. Burge	Sprg. 1983
V.	32	N.	1	Genealogy and Libraries	Diane Foxhill Carothers	Sum. 1983
	32		2	Current Problems in Copyright	Walter Allen Jerome K. Miller	Fall 1983
	32		3	Atypical Careers and Innovative Services in Library and Information Science	Walter C. Allen Laurence W.S. Auld	Win. 1984
	32		4	Research in Librarianship	Mary Jo Lynch	Sprg. 1984

A complete list of back issues is available from *Library Trends*, Publications Office, 249 Armory Building, 505 E. Armory Street, University of Illinois, Champaign, IL 61820.
† Also available in clothbound editions.

Library Trends

Forthcoming numbers are as follows:

Summer 1984, *Protecting the Library*. Editor: Alan Jay Lincoln, Associate Professor of Law and Justice, University of Lowell, Lowell, Massachusetts.

Fall 1984, *The Quality of Trade Book Publishing in the 1980s*. Editors: Walter C. Allen, Associate Professor, Graduate School of Library and Information Science, University of Illinois at Urbana-Champaign; Eleanor Blum, Professor Emerita, University of Illinois at Urbana-Champaign; and Ann Heidbreder Eastman, Publishing Staff Officer, University Faculty Book Publishing Committee, Virginia Tech, Blacksburg.

Winter 1985, *Collection Evaluation*. Editors: Elizabeth Futas, Associate Professor, Division of Library and Information Management, Emory University, Atlanta; and Sheila Intner, Assistant Professor, School of Library Service, Columbia University, New York.

Spring 1985, *Community/Junior College Libraries: National and International Aspects*. Editor: Marilyn Searson Lary, Librarian, Hillsborough Community College, Brandon Campus, Brandon, Florida.